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APRIL 1945

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High up where their Allison engines leave long vapor trails, P-38 Lightnings pursue dangerous photographic missions. Stripped of their guns, these planes get back with their priceless "star's-eye" view of enemy territory, solely through their speed and ability to fly at extremely high altitudes. ★ Reconnaissance pilots, like fighter pilots, know how dependable Allison engines are—how smooth—how slim and how saving with fuel. They appreciate all the special virtues of these engines—virtues that will make them equally valuable in the planes you will enjoy after the war. ★ The secret of these virtues lies in Allison's thirty years of experience in making precise products out of metal. And this reputation vital in aircraft engines will be equally evident in the performance of any Allison product in the future.

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AIR TRANSPORTATION

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APRIL
1945

FEATURE ARTICLES

NEWS FEATURES

NEWS

DEPARTMENTS

THE COVER—Like a soaring eagle the Douglas XB-19A crosses the sky. This 132-foot plane still is the largest in existence. According to the Air Technical Service Command, the XB-19A will evolve as a cargo-carrier.

JOHN F. BUDD, *Editor and Publisher*

Publishers of CUSTOM HOUSE GUIDE *and* AMERICAN IMPORT & EXPORT BULLETIN

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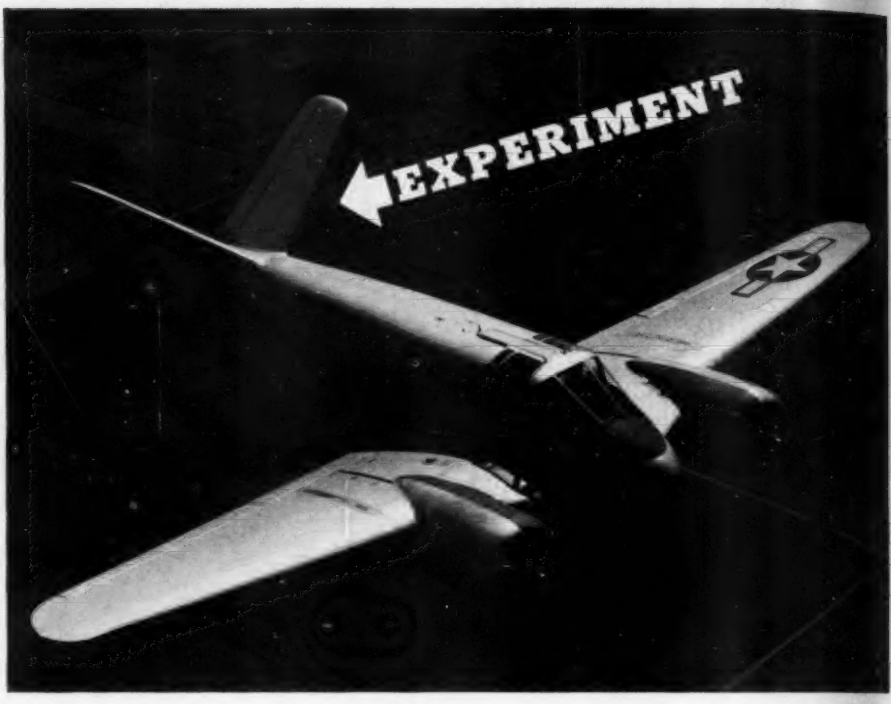


MANY research projects and experiments have been originated by Beech engineers since 1932. The results of their willingness to explore new fields are notable. The unique negative stagger Beechcraft biplane, long outstanding in its power class, is one. Another is the Model 18 all-metal twin-engine Beechcraft feeder airline and executive transport, an airplane which since 1936 has made such a record that thousands of these planes serve the armed forces as advanced trainers and personnel transports all over the world.

Since 1941, research at Beech Aircraft has had as its purpose the creation of improvements in aircraft designed for military use. Most of this research cannot be described, for obvious reasons. Something can be told, however, about the experiment pictured above—an AT-10 Beechcraft advanced trainer equipped with a unique two-element empennage which replaces the conventional tail group. Its successful flight tests have shown interesting possibilities.

Whether or not this particular experiment proves practically useful is unimportant. What does matter is the spirit behind such research—an aggressive exploratory spirit that is not confined by tradition and convention but is free to operate anywhere within the boundary of sound engineering principles. The Beechcrafts of the future undoubtedly will reflect the gains attained through such a program, and will offer to their owners, whether military or commercial, an extra degree of performance and value.

Beech Aircraft
CORPORATION

BEECHCRAFTS ARE DOING THEIR PART

WICHITA, KANSAS, U. S. A.

TONS—NOT POUNDS!

The author foresees an intense competitive struggle between the airlines on one hand and the railroads and trucking industry on the other. The "great future of the air transportation industry lies in the field of air cargo," he says, calling for specialization in cargo handling. You'll like how the writer courageously develops his point.

By CHARLES J. ROGGI
Fairchild Aircraft Division,
Fairchild Engine & Airplane Company

THERE were no cargo handling problems before the start of the war. Up to now, it has been the job of the operator to move the freight—and little time has he had for study or for experiment.

It is a true picture the experts have given us; it is a real picture. It is based upon the experience of loading, transporting, and then again unloading millions of pounds of cargo: cargoes of all kinds; all shapes and sizes; of varied densities; crated and uncrated; packaged and unpackaged; bound and in bulk. It was cargo handled under difficult conditions, under the stress of haste and emergency. Sometimes it was done with an acute shortage of labor and ground facilities, and at other times it was done with an overabundance of these essentials.

In its more colorful aspects, it has made a dramatic picture and a thrilling story. *It is proving that the great future of the air transportation industry lies in the field of air cargo.*

But that is the picture and the story of today, and of today's problems. It is the story of the transportation of cargo as known only by the operation of the DC-3, the C-47, the C-54, the C-87 and the C-46. It is the story of the transportation of cargo by airplanes that were not designed or developed for that job. In the main, it is a discussion of ways and means of overcoming the inherent weaknesses and faults of such transports when placed in cargo service. Thought and study is given to improving the handling of cargo through doors in the side of the fuselage—doors in all cases at a height above truck level, and in many cases doors too narrow for quick and efficient passage of cargo and of cargo handlers.

These problems include the use of small and separate cargo compartments at the front end and at the rear end. The shapes and sizes of these compartments are different; the levels of the doors are different; their very shapes are different.

Loading cargo in the belly of the fuslage is no fun either. Try it some day—I have.

And, then, the conventional tail wheel landing gear brings with it many basic problems. All I would like to say on this point is that the railroads and the trucking industry will never have to worry about competition from air transportation just as long as any appreciable part of the equipment we operate has a tail wheel.

By pointing out the fundamental handicaps under which such a gigantic job as is being accomplished today in the transportation of cargo by air is, in an indirect way, paying tribute to the initiative and resourcefulness of the Air Transport Command, the Naval Air Transport Service and the airlines. Could you imagine the impossible job the railroads would have been faced with if they would have attempted to haul rail freight in Pullman cars stripped of their seats?

And what of tomorrow?—the tomorrow, when we shall speak of cargo in terms of *tons* and no longer in terms of pounds; the tomorrow when the air transport industry will face the trucking industry and the railroads in a tense competitive battle for every ton of cargo hauled.

Many of our friends have offered the palliative that the cargo on which the air transport industry will grow will not be taken from

the truckers or the railroaders, but that it will be newly created cargo—cargo which will not have come into being without air transportation. That may be so in some small part, but the bulk of the air cargo of the future will be won over (if it is won over) from the other competing modes of transportation.

The air transport industry is about to enter a period of intense economic competition, with the railroads and the trucking industry which will resemble in many, many ways the competitive struggles of recent transportation history. These were the struggles between the inland waterways and the railroads, between the railroads and the trucking industry, between the railroads and the pipe lines, and between the streetcars and the buses. I see that struggle coming; I know it is coming.

You say this is far off in the distance? I recently attended in Chicago the annual convention of the United Fresh Fruit and Vegetable Association. I saw that association make the principal event of that convention a luncheon meeting dealing with the development of the transportation of fruits and vegetables by air. That meeting was attended by the airlines, by the aircraft manufacturers, by representatives of the Department of Agriculture, by representatives of the CAB, and by about 500 members of the association.

The group sat for almost five hours in the hope that it would find out how soon they could expect to ship some of their produce by air. All were earnestly attentive to everything that was said. In that convention, *air transportation stole the show.* It stole the show not because of the work of any aggressive committee, but because of the compelling force of its promise to a large and important group of shippers. *(See February, 1945 issue of Air Transportation, Page 20.)*

Would you call that a straw in the wind, or would you call that a strong undercurrent?

Before that meeting one large shipper told me that when and if certain of his produce could be shipped with a rate of under 10 cents per ton-mile, most of that produce in his region would undoubtedly be shipped by air. At the present time they are shipping by rail out of that same region 150 carloads per day of this produce. And that is only one of many similar regions.

During this luncheon meeting a representative of Douglas stated that the DC-4 would haul cargo at a direct operating cost of four and one-half cents per ton-mile. That ton-mile cost figure is based on the method of calculation recommended by the Air Transport Association, and with a permissible landing speed of 85 miles per hour. It does not include any of the so-called indirect costs.

To me that looks like the air transport industry is within the reach of a *mass market* where the volume of cargo—in tons, not

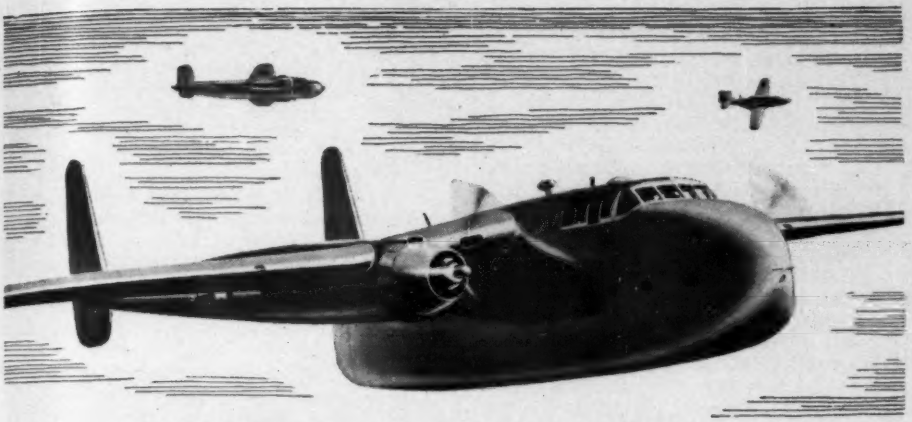
LOW-COST HAULAGE—The author refers to a certain Douglas representative who stated that "the DC-4 (shown above) would haul cargo at a direct operating cost of four-and-one-half cents per ton-mile." To Dr. Furnas, this "looks like the air transport industry is within reach of a mass market," far greater than it is today.

pounds—would dwarf the present figures now reported by the airlines, and probably even exceed by a wide margin those just reported by Colonal Harold R. Harris. *(An article by Colonel Harris appears elsewhere in this issue.)* Note, too, that this potential air cargo would mean that much less freight for the railroads.

If the air transport industry is going to be successful in this forthcoming struggle—if it is going to live up to the bright future it now promises—the subject of cargo handling must be studied closely and cooperatively by the aircraft manufacturer as well as by the operator. The aircraft manufacturer can and should approach that subject with a fresh viewpoint—a viewpoint that is not limited in scope and in breadth of vision by a too-close concern with the direct and immediate problems brought on by the present-day operating technique and equipment. The aircraft manufacturer is *willing* to concentrate on the problem of cargo transportation and cargo handling. He is not tempted to the same degree as the operator to compromise in the attainment of the highest serviceability and performance of the cargo transport. He is not subject to the strong influences and traditions of an organization that is predominantly passenger service conscious.

I am quite convinced that greater progress and more rapid improvement in the handling of air cargo will be realized when we approach that subject as one more closely related to the subject of the basic design of the airplane than as one related to operating technique and practices. The aircraft manufacturer will do this quite naturally and logically. He will list as one of the basic requirements of his cargo design, efficient and low cost handling of cargo.

In the ordinary course, the manufacturer should look to the operator for guidance, for



NORTH AMERICAN JOINS FAIRCHILD IN PRODUCING THE

PACKET

AMERICAN air power, the mightiest on earth, was built by teamwork with American industry. Into our planes go the efforts of manufacturers and suppliers great and small.

The Fairchild "Packet," the Army's newest and most efficient carrier of air cargo, was built by this kind of teamwork: The teamwork of the Army with Fairchild designers and engineers, Fairchild sub-contractors, builders of engines, suppliers of metals, the sub-assemblers and fabricators of myriad parts and materials!

Now the Army Air Forces have designated North American Aviation, Inc., as another builder of "the flying boxcar." Fairchild welcomes this newest member of the "Packet"-building team, famed for the B-25 Mitchell Bomber; the P-51 Mustang; and the AT-6 Texan.

Soon the "Packet" will be coming down the runways from both Fairchild and North American.

BUY U.S. WAR BONDS AND STAMPS

Fairchild Aircraft

Division of Fairchild Engine & Airplane Corporation, Hagerstown, Maryland

The Author

Thirty-eight-year-old Charles J. Roggi is a native of Brooklyn. He is a graduate of the Massachusetts Institute of Technology and also spent a year in the Harvard Business School.

From 1930 to 1933 he was assistant editor of Railway Journal *and* Bus Transportation. *After operating his own import and export business in 1934, he became connected with E. H. Rollins, Wall Street bankers, and served as regional manager at Rochester, New York, for five years. In 1940 Mr. Roggi left to become associated with the United States Navy Bureau of Aeronautics. A year later he joined forces with American Airlines, staying until 1943.*

Early last year Mr. Roggi turned up at Curtiss-Wright for which organization he did sales promotion of the C-46 Commando. *In December he joined the Fairchild Aircraft Division, and now is connected with the commercial sales development program of the C-82 Packet.*

suggestions and recommendations in the design and development of any transportation vehicle. However, the tremendously rapid growth of air cargo to the present stage has been no ordinary phenomenon. The demand for and the expectation from air cargo have been created by the fantastic accomplishments of the airplane as an instrument of war. This has taken place without an extended period of trial and error during which we would have accumulated the knowledge and experience to cope with the problems as they arose. The flood gates of air cargo were thrown open with as little advance notice as the Japs gave to Admiral Kimmel and General Short at Pearl Harbor.

This being so, it is not necessary, and for some reasons it would even be undesirable, to have the aircraft manufacturer lean too heavily on the operator for suggestions and recommendations at the present stage in the development of the transportation and the handling of air cargo.

Let the manufacturer approach and study the subject of cargo handling as one of the problems of basic airplane design. Let him think of cargo handling as related to a specific airplane and not as an isolated technique of operation, equally applicable to all types of airplanes and to all types of operations.

Let him study and weigh carefully the comparative merits of rear end loading, of front end loading, and of multiple side door loading. And when I say loading, I include the operation of unloading also. Let him study the merits of various sizes and shapes of fuselage interiors for a given payload capacity. Let him find the right answer to the controversy of reducing the fuselage volume just sufficiently to accommodate the payload capacity assuming a minimum density, or flying with some non-usable space which becomes very useful and necessary for efficient cargo handling.

He will study the possibility of making full utilization of loading and unloading of cargo directly from truck to airplane. He will study the possibility of loading and unloading directly from the airplane to a loading platform. The manufacturer will soon learn in these studies that two handlings of cargo can never

VISITORS AT FAIRCHILD—In connection with a discussion of its possible use in the future air transport of perishable fruits and vegetables, the Fairchild C-82 PACKET is host to a group of visitors and representatives of the company. Shown as they inspect the spacious cargo compartment of the big plane are (front row, left to right)): Charles J. Roggi of Fairchild, author of TONS—NOT POUNDS; Colonel L. H. Brittin, director of the Evans Research Fund; Dr. R. W. Hoecker, of the Department of Agriculture; Marvin J. Parks, Fairchild service engineer; (back row) Frederick L. Thomsen, also of the Department of Agriculture; Harry R. Playford, chairman of the board of the First National Bank, St. Petersburg, Florida; D. G. Bash, director of Research of National Air Lines; and William S. Howell, of St. Petersburg.

be accomplished as quickly or as cheaply as one handling of the same cargo.

He will give thought to specialization in cargo handling. He may devise especially effective methods for handling mail, for handling the usual express packages, for handling perishables of a certain kind. He may think of better ways of loading and unloading bulky machinery to be transported to regions where ground handling equipment is scarce.

He will experiment with the use of removable winches in the fuselage, with conveyors and endless belts, with pre-loaded containers or pallets, and with "pick-up" and "drop" installations. He will, if I know him as well I as think I do, beg, borrow or copy from the best of the ideas and experience of the truckers and the railroaders. But he must and will do all of that as part of his design plan and problem.

If that invitation is extended to the aircraft manufacturer, if he is encouraged to assume that latitude and freedom of movement, he will come up with the right answer for efficient and low cost handling of air cargo.

Wide Benefits of Air Parcel Post are Indicated in Bill

STATISTICS have been brought forward to show that 29 million persons living in 22,000 towns and villages or along rural free delivery mail routes, who are not now receiving the benefits of air express, would be able to use the fastest means of transportation with the passage of the bill to create an air mail parcel post service now before the Post Office and Post Road Committee of the House of Representatives.

Exploratory shipments made by the airlines have proven the feasibility of carrying perishable products economically from the farm to the market in fairly large quantities, it was pointed out. Air mail parcel post would go a step further in making possible the fast movement of fresh vegetables, fruits and other perishables in small quantities for long distances from the smallest producer to the individual consumer.

By placing the largest markets of the country within a few hours of the smallest village and farm, it is stressed, air mail parcel post would give many individual producers and small groups an opportunity to become merchandisers of high profit specialities sold under brand names and enable them to reach the cream of a dozen markets instead of having to depend upon one or two such markets when their products are of a perishable nature that will not stand long shipments under present means of transportation.

Working in reverse, air parcel post would enable the small town dweller and the farmer to order goods and supplies and repair parts from far away store and market centers, and receive them within hours, instead of days or weeks. The farm woman might get a new hat or nylons by plane; the daughter, a wedding gown; and the son, a shipment of shells.

The bill to create air mail parcel post was introduced by Congressman Chet Holifield of California, who pointed out that not only would the bill serve the needs of smaller communities, but that it would make possible the use of a part of the huge productive capacity of the aviation industry and the highly trained and experienced pilots returning from the war.

Citing cases that would show the value of air parcel post to specimen groups, Congressman Holifield stated it would enable the small farmer at planting or harvest time to get the parts he needs for machinery repairs or seeds for replanting quickly and directly from the manufacturer or seed grower delivered to his door; that it would enable the medical profession to take full advantage on short notice of the fastest method of transportation to obtain any special drug that ordinarily is not carried in stock by local drug stores, as well as enable the merchant in the smallest town to have overnight service and access to the largest stock in the largest wholesale houses in the most distant part of our country.

AGRICULTURE BECKONS THE PLANE

by DALE GREGORY

SOMETHING of a boom is expected in aerial agriculture after the war; and, to take care of the anticipated upward surge after the Rising Sun has been forcibly set, the Commercial Operations Section of the Safety Regulations Board has plunged into the work of preparatory planning. Mustered-out pilots will take advantage of these new opportunities, officials of the Civil Aeronautics Administration believe.

Crop-dusting is held out as a first-rate opportunity for postwar airmen. It is being pointed out that equipment would have to be specially designed and properly maintained. Experts in this field underline the fact that in the past many aerial crop-dusters were unreliable and less than exact in their labors, neglecting to put the business on a permanent basis. On the credit side of the ledger it may be said that there have been notable exceptions. The farmer, fruit grower, and the rancher are looking forward to the aerial method which they know can be wholly effective. There have been more than two decades of experimental spreading of germicides, larvacides, and numerous types of seeds by plane. An important result is the general acceptance of the plane as an effective instrument in crop-dusting. For example, when time is of the utmost necessity in order to save a crop, the plane will do the job faster, more evenly, and, what is equally if not more important, cheaper. Range grass, alfalfa, wheat, oats, and rice have been seeded by air.

Aerial rice seeding presents an interesting story. Before the plane offered itself as a seeder, rice was dry seeded, following which the fields were flooded. But the birds followed, pecking the seed, while migratory ducks and geese pastured on the growing rice. When the first attempts to seed rice from the air were made, the method was found to be unsatisfactory. The dried seeds were dropped on flooded areas, and they floated away to lodge in winrows at margins, or sink in masses. The result was that the field was never evenly planted. But when the seeds were pre-soaked, it was found that sufficient weight was given to them to sink immediately. Now more than 80 percent of California's 130,000 acres of rice fields are sown in this manner.

It has always been a difficult task to seed range lands in mountainous country. The airplane has taken over that job. The Civil Aeronautics Authority has made the point that "land which has been grazed or burned out, was once considered lost for good. Now the aerial seeder replenishes the crop in a few hours, the rains come, and land is reclaimed to fatten millions of pounds of beef, lambs, horses and wild game."

It is predicted that man's perpetual war against the insects will be fought almost entirely from the sky. The old methods, of course, have always been too slow. When pestilence appeared, the war against it remained a give-and-take affair for an extended time. Speed to combat the insects was always in demand, and now the plane is here to fulfill that purpose. A dusting plane is capable of covering between 300 and 500 acres a day. A bug versus a plane is pretty much an uneven battle—and happily so for the farmer.

Fruit and vegetable producers have learned that the least expensive and most effective way to dust their plants and trees is by air. The truck farmer has another reason for preferring the plane. He claims that the whirling motion applied to poisonous dust by the propeller blast drives the dust under the plants to the bottom sides of the leaves, where most predatory insects feed.

One need not be a cowboy to know that the coyote is a perennial source of trouble and expense to cattle raiser. These prairie wolves are now stalked by flying hunters who strafe the animals, bringing them down in far greater numbers than by ordinary means.

The herding of wild horses by air is a proven thing. When it is necessary to count antelope, elk, and deer in preparation for their being driven to new feeding grounds, or feeding starving snowbound game animals, the plane stands right on top.

"Forestry welcomes the airplane for many reasons," states *The CAA Journal*. "Flying fire patrols can keep close watch and report by radio at the first sign of fire. Parachuting fire fighters can be dropped to the burning areas quickly, often before the blaze gets out of control.

"A new type parachute has been developed

for jumping into the uninviting branches of high trees, rocky slopes, mountain sides, and thick forests. It has a 30-foot canopy for slower descent, and a quick release attachment for use when the jumper gets hung up high in a tree.

"After the jumper is on the ground, the pilot drops another chute carrying fire-fighting tools, lamp, two days' rations, first aid kit, water canteen, and other necessities. The jumper carries a walkie-talkie radio and gives

(*Continued on Page 28*)

GOOD HUNTING—Coyotes, dangerous pests of the prairies, provide a bonanza for Edison Ward and Tony Engelburt (left to right) who have literally covered their plane with pelts. Imagine what the aerial fighters of today can do to the cattle-killing prairie wolves tomorrow.

SHADES OF ZANE GREY—There's a new romance in the West, and it ties right in with commercial aviation. Here a light plane is shown herding a half-dozen wild horses out "on the lone prairieee."

RESULTS of A. T.'s CHOSEN INSTRUMENT POLL

Chosen instrument or regulated competition?

The controversy has raged at top fury for months, each side hurling broadsides that have made headlines, provoked countless columns of editorial comment, and occasional remarks by hundreds of orators in the fields of industry, commerce, and Government.

Recently, Alexander B. Royce, who is representing 17 airlines opposed to the chosen instrument policy, unleashed a blistering attack on the legislation introduced by Senator Pat A. McCarran of Nevada which would create an all-American flag line into which all United States international air transport operations would be merged. He asserted that "the national security will be served best through a policy of vigorous, reasonably regulated competition among a number of air transport operators and the aircraft manufacturers who compete for their business."

Shortly afterward, David E. Grant, foreign counsel of Pan American World Airways, set off his own cannon, declaring that competition cannot be justified in the international field by the same arguments that show it to be a desirable domestic policy. He denied that the proposition was a monopoly, pointing out that participating in the company would be open to all transportation interests to the extent of their respective resources. The operation in the international field of more than one United States line, Mr. Grant said, was a duplication of facilities that would prove costly to this country.

It was a luncheon conversation among staff members of AIR TRANSPORTATION which prompted an informal survey of members of Congress on the hotly debated subject. Three questions were framed for the legislators:

(1) Were they in favor of the selection of a single company for over-ocean air transportation as the chosen instrument of the Government?

(2) Would they show partiality to the formation of such a single company if its stock were divided among all the airlines?

(3) Or did they feel that regulated competition in international aviation was the best bet for all concerned?

Each of the Congressmen and Senators contacted was advised that AIR TRANSPORTATION was "interested only in publishing the results of its survey," and that the Government official need not disclose his identity. In spite of this, 80 percent of those replying identified themselves; and in a number of instances, some included remarks in the form of phrases, sentences, and even special letters. Eighty-five percent of the replies were from members of the House of Representatives, and 15 percent from members of the United States Senate.

An interesting cross-section was obtained. Those sending in their answers represented 27 States, situated in every section of the United States.

Overwhelming support—at least from those members of the 79th Congress filing their opinions with AIR TRANSPORTATION—indicated favor for Number 3; that is, regulated competition. Fully 90 percent comprised this group. Twelve percent of this bloc were Senators.

One Eastern Congressman, although stating preference for regulated competition, said: "May feel differently about No. 2 after fuller study." Another member of the House, a Westerner, said, "I believe I do" on the No. 3 line; but added: "Answer to No. 2 would depend on stock distribution."

Other comments took the following lines:

"I am opposed to monopolies in any form."

"I do not believe in monopolies. Properly conducted competition in aviation will in my opinion prove to be the best for the public as well as the airlines."

"We have laws prohibiting monopolies and cartels, yet some 'big business' still tries to circumvent these laws by other directly opposed (in principle) laws. I believe in individual initiative and free enterprise."

"It would be tragic for this country to have one airline monopolize the international flight routes. It is highly improbable, in my opinion, that the Congress would sanction monopoly as against proper and wholesome competition."

One Midwestern Senator declared flatly: "Monopoly slows progress."

Another from the South went to some extremes to place himself on record. Next to No. 1 he wrote: No. Would consider one (airline) over a particular route." Beside No. 2, he penned: "No. Would prefer some latitude for competition." He marked "Yes" op-

(Continued on Page 16)

BRANIFF INTERNATIONAL AIR EXPRESS

Only 18 hours after the newspapers were printed in the Tribune Tower—they were distributed in Mexico City! Example of streamlined handling for cargo between U. S. cities and Mexico—via Braniff. Immediate in-transit customs clearance for shipments at Laredo. Call local Railway Express Agency for Braniff Shipper's Letter of Instructions. Free Pick-Up.

For Memorandum Tariff and Further Information, Write

BRANIFF AIRWAYS

General Traffic Office, Love Field, Dallas 9, Texas

Networks Expand as French Airlines Resume Operations

Believe it or not—the French air network today boasts 6,000 miles more than it had the time the opening gun of the Second World War was fired. Fully 47,000 miles are being covered at the present time.

Five more French airlines have resumed service to various European and colonial points. One is doing domestic flying, another connects West Africa with France, a third offers flights to the Near East, a fourth serves Morocco, while the fifth swings around French Africa from Algiers, terminating in Paris.

This renewed activity did not grow of itself. It is the product of much reconstruction work. When France was liberated by the Allies, the retreating Germans destroyed the whole substructure of the country's airlines. Landing fields had been plowed over, and radio and meteorological stations were blown up. Last month word was received in this country that 60 of these stations have been repaired, making a number of airports again available for commercial use.

Even in the dark days of 1941 General Charles de Gaulle took what steps were possible to reorganize the aerial network of the Near East. This was a special task entrusted to Colonel Lionel de Marmier. There were numerous obstacles, but Colonel de Marmier's strenuous efforts were crowned with success. Since that time the Damascus-Brazzaville, Algiers-Madagascar, and Damascus-Teheran lines have been operating regularly.

Before the war, France had six passenger and air mail lines offering transportation service to every capital in Europe. Air France covered routes from Paris to all the European capitals, and from Marseille to Hanoi, Hong Kong, Tunis, Algiers, Damascus, and Bagdad. It also included flights from Toulouse to Casablanca, and from Santiago to Spain.

Air Afrique linked Brazzaville to Algiers, Tananarive, Oran, Tunis, Gao, and Bamako. Aero Maritime connected Dakar to Pointe Noire, and Niamoy to Cotonou. Two Government-owned airlines covered Madagascar. Air Bleu operated three air mail routes within France. Prior to 1939, Air France-Transatlantique had already organized a *Clipper* fleet for transatlantic flights.

Chosen Instrument Poll

(*Continued from Page* 14)

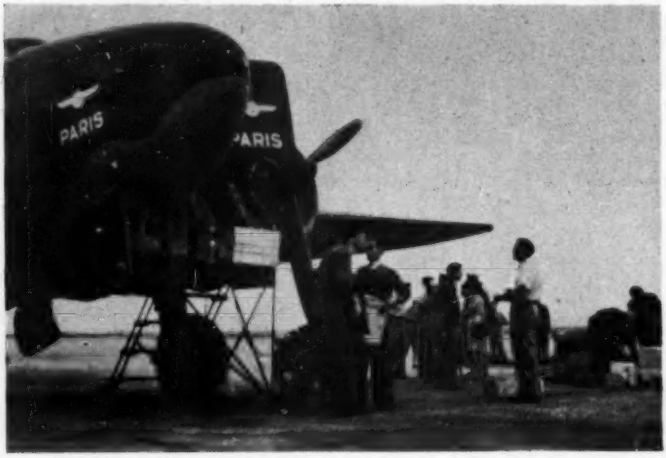
posite No. 3, and then added: "The oceans are vast and do not think one airline should have all, nor do I think the Government should."

Four percent of the returns preferred the creation of a single company whose stock would be divided among the airlines. One Congressman, however, qualified his answer with these words: "Prefer this but undecided."

Six percent reported themselves as undecided on the question. None offered remarks.

Wallace Is Joining The Ranks of Airmen

Secretary of Commerce Henry A. Wallace is of the firm opinion that there is an extremely roseate future for civil aviation. So certain is he of this, that he is taking flying lessons—even though he is 56 years old. Mr. Wallace testified at a hearing on Federal legislation, and predicted that the $19,000,000,000 industry now employing 1,700,000 may slump to five per cent of that figure after V-J Day if there will be no Federal aid. If Congress adopts a plan to aid the industry, he said, 150,000 more persons may be employed within two years after the war in the Pacific ends and 400,000 more within 10 years of that day.



FRENCH AIR ACTIVITY RESUMED—Liberated France is taking swift steps to renew her former status among the great nations. Today, France's aerial network is even greater than it was in 1939. This photograph, supplied by the French Press and Information Service, shows the bustle of activity as a plane prepares to make the flight on the new Damascus-Moscow line.

Future as Cargoplane Lies in Store For 132-Foot XB-19A, ATSC Reveals

Douglas Plane Will Carry a Payload Of 45,000 Pounds, Engineers State

THE Douglas-built XB-19A—132 feet of plane which has provided important engineering and flight data for the famous B-19 and the B-29—is destined for a career as a cargo-carrier. This news was made public for the first time a few weeks ago by the Air Technical Service Command, at Wright Field, Dayton, Ohio.

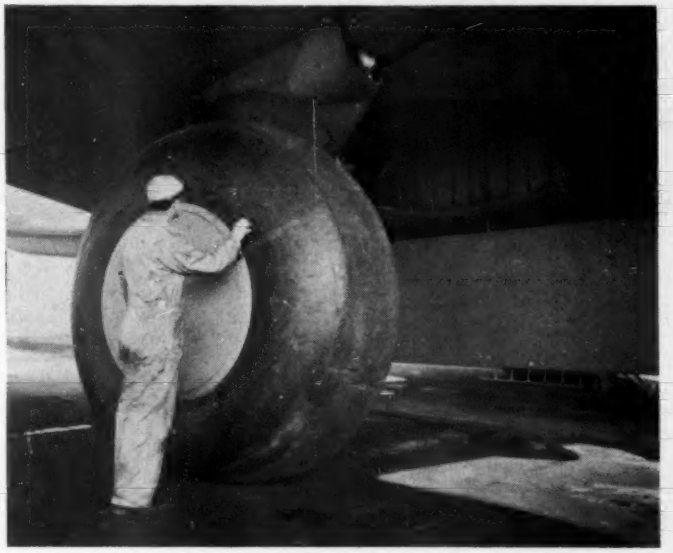
The giant warplane has never dropped a bomb on enemy territory, or fired a gun in combat. Nonetheless, the XB-19A is reputed to have made more contributions to the war effort than any other single modern airplane in the United States, and probably the world. It is quartered at Fairfield ATSC, near Dayton, Ohio, where engineers are stripping it of experimental equipment for revamping into a huge air cargo-carrier.

Brigadier General F. O. Carroll, chief of the Engineering Division, stated that the experience gained with the B-19 and XB-19A has "considerably accelerated our program for long-range heavy bombardment aircraft." He said that, "it is typical of the contributions of this airplane, for it can continue to serve by speeding supplies wherever and whenever they are needed."

The XB-19A, which has a wing spread of 212 feet and a fuselage 132 feet long, still is the biggest airplane in the war. The B-29 *Superfortress* has a wing span of 141.3 feet and is 99 feet long. The Consolidated Vultee Model 37, primary details of which were revealed for the first time last month (see the March issue of AIR TRANSPORTATION), will, when built, have a wing span of 230 feet and a length of 182 feet. The wing span of the *Stratocruiser* is 181 feet, three inches, and the length 110 feet, four inches. At the present time, the XB-19A is powered with four liquid-cooled Allison V-3420 in-line engines, each developing 2,600 horsepower—the total the equivalent of two modern streamlined trains. It is equipped with 18-foot two inch propellers.

Army pilots swear by the XB-19A, pointing to the ease with which it is handled. As a cargo-carrier the plane will have tie-down racks, a new reinforced floor, a large cargo door, and a loading ramp. Engineers estimate that at least 45,000 pounds' payload can be readily handled. The payload, of course, varies with the length of the flights.

In a recent flying test the XB-19A achieved speed in excess of 250 miles per hour.



PLENTY OF RUBBER HERE — The maintenance man is dwarfed by the eight-foot high tires of the XB-19A. After three years of service in the Army, the plane will be turned into a first-rate cargo-carrier.

? How Big How Fast How Many ?

One reason why we liked this article was that it was able to present a careful scientific approach to postwar air transportation, but still leave itself free of the shackles which constrict progressive thinking and action. The author covers two periods: up to 1950, and then the latter half of the Twentieth Century which he calls "the beginning of the real Air Age."

By Dr. C. C. Furnas
Director of Research, Curtiss-Wright Airplane Division

DURING a war very few scientists have time for leisurely contemplation or for experimentation on indefinite items; hence, very few scientific discoveries are made during a war period. On the other hand developments and engineering advances proceed at a tremendous pace—full speed ahead on applying the basic scientific knowledge that has been accumulated during the more leisurely days of peace.

During the period of World War II literally hundreds of significant improvements have been made in the construction and functioning of the component parts of the airplane. Very soon after the war is over these advances will begin to make themselves evident in greatly improved, and as compared to prewar years, greatly enlarged activities in commercial and private aviation. The coming era of air travel is almost certainly destined to make major changes in the pattern of American living and, in the not distant future, in the way of life all over the world. One does need to look at the crystal ball to make some relatively sound prophecies. He needs only to take the evidence in hand and study it carefully to be able to perceive some trends which he can predict with confidence.

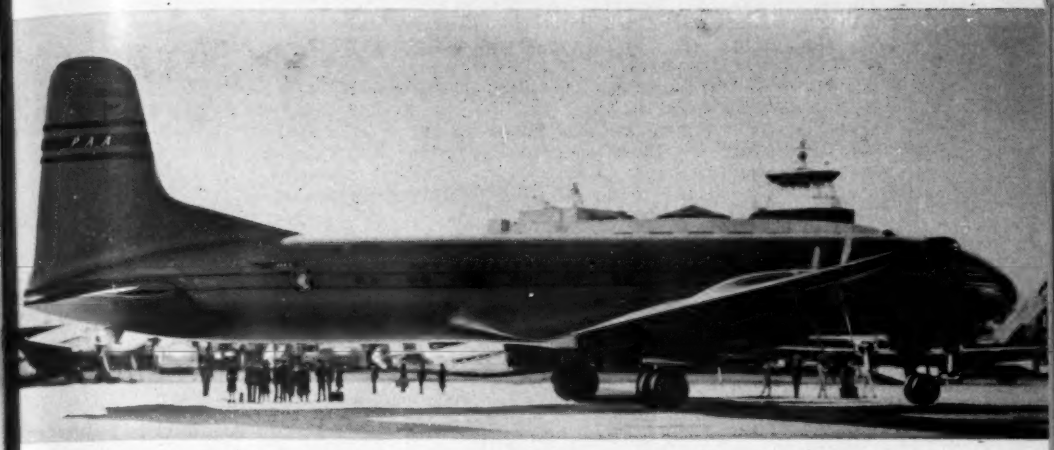
For military reasons many of the aviation developments are on the secret or confidential list and hence cannot be discussed, but some of the important items have been publicized in general terms even though the details must still remain under cover. Though the list of important developments is very long, there are four items that stand out as those which will probably be most effective in the improvement of aviation in the near future. These are: *radar, the gas turbine, the so-called jet propulsion power plant and the helicopter.*

In the immediate postwar picture it will be the *commercial* aviation developments that will have the greatest effect upon the average citizen. Private flying will have its major effect at a later date. Probably there are three major questions that the average person would like to hear answered for the commercial airplane of the future:

1. **How big?**
2. **How fast?**
3. **How many?**

I shall endeavor to answer these questions twice. First, for the immediate postwar period, up to about the year 1950, and again for the period following 1950. There are two sets of answers because in the immediate postwar picture we will be involved in consolidating our technical gains, but after five years we can expect to see the really new developments becoming effective.

A recent publication *Air Transportation in the Immediate Postwar Period*, by B. A. McDonald and J. L. Drew of the Curtiss-Wright



FOR OVERSEAS SERVICE—"For transoceanic flights the equipment will be larger, probably starting with planes of about 100-passenger capacity, and going to larger sizes as traffic increases." The Douglas DC-7, mentioned by the author as in the 100-passenger class, is placed in the fourth of the four categories.

Airplane Division, gives answers for the above questions for the year 1950. The consideration for the years beyond must remain somewhat speculative, and the answers relatively indefinite.

Standard equipment on domestic airlines at the present time is the Douglas DC-3 which has a carrying capacity of 21 passengers. There is a current Sunday-supplement opinion that airplanes of this size are merely microscopic compared to those which will be flying in the near future, and that we may expect to see air travel in thousand-passenger planes; but reality will bring something much less dramatic than that. As far as engineering skill and knowledge are concerned, it would probably be possible to design, build, and fly an airplane weighing perhaps a million pounds and with a carrying capacity of a thousand passengers—but it is not anticipated that this will be done. There are certain practical, particularly economic, features which come into the picture.

In order for a commercial airline operation to be successful and profitable it must operate at 50-70 percent capacity most of the time. Further, an airline at least in the continental United States must supply service with great frequency. Offhand it may seem a little silly, but *the faster a person can travel the more does he want the service available at all times.* Hence, the demand will be for small airplanes flying at frequent intervals, in order to meet the public demands and still maintain a profitable operation.

Without going into a lengthy consideration of the data and the long arguments which went into predicting the size of commercial airplanes, the results can be summarized in a very few sentences. It is anticipated that in the immediate postwar years the flying public of the United States will need to have airplanes of four different sizes:

1. The so-called small feeder planes operating on side lines which lead into the main airlines, and will be of 10- to 15-passenger capacity.

2. The small trunk line airplane, which will be used for the local service, such as flights from New York to Chicago with several stops along the way. This will be of about 20- to 25-passenger capacity—the size of the present DC-3.

3. The bulk of the airline travel will be in passenger planes of 40-to 60-passenger capacity which will be standard equipment for the main trunk line. Two of the Army cargo planes now in widespread use are about this size; namely, the Curtiss-Wright *Commando* or C-46, and the Douglas C-54. There will probably also be a demand for a few (but only a very few) airplanes with a carrying capacity of 80 to 125 passengers. The new Lockheed *Constellation,* which has recently been greatly publicized, has a carrying capacity just a little less than this.

4. For transoceanic flights the equipment will be larger probably starting with planes of about 100-passenger capacity and going to larger sizes as traffic increases. The Martin flying boat, the *Mars,* is a plane of about this size. Land planes of the larger sizes will probably also be used. The Douglas DC-7 is of 100-passenger capacity.

The pattern of size for commercial aviation in the immediate postwar picture is already at hand; the typical planes are already in use by the armed forces. There will be a trend

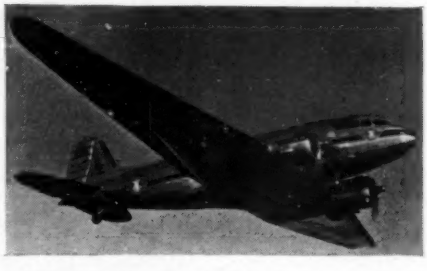
toward the use of larger sizes, but it will develop slowly.

In order to answer the question of how fast commercial airplanes will be, one needs to counter with another question: *How much speed is the public willing to pay for?* This can only be answered by experience which has not yet been acquired. Hence, one cannot predict accurately what the future transport speeds will be, but the trend can be outlined quite definitely.

For an airplane of a given aerodynamic efficiency there is a most economical cruising speed. At speeds lower than this the fixed charges, the salaries of operating personnel, etc., seriously cut down the financial return over any given period of time and thus make the operation unprofitable. At speeds greater than this optimum more power and more fuel are required, and the general wear and tear on the equipment is greater. If you go much above this optimum speed you begin to pay dearly for it, and no one yet knows how much the public is willing to pay for the saving in time. The airline operator would, of course, like to have his planes flying at the most economical speed; but competition and public demand may force him continuously to raise this limit.

Standard Equipment

The Douglas DC-3, the standard equipment at the present time, normally cruises at about 180 miles per hour; but that is a little too slow for the postwar aviation. A short time back the new Lockheed *Constellation*, aided by a good tailwind, flew non-stop from Burbank, California, to Washington, D. C., in six hours and 58 minutes at an average speed of 329 miles per hour. The cruising speed of this ship is of the order of 275 miles per hour which probably sets about the top of the anticipated commercial air travel cruising speed in the immediate postwar period. The moderate-sized transports mentioned before, the Curtiss-Wright *Commando* and the Douglas C-54, have cruising speeds of the order of 225 miles per hour; hence, it is anticipated that the schedules for the average commercial airlines on the moderate to long hops will be arranged for normal air cruising speed of 225 to 300 miles per hour.



THE CURRENT STANDARD—"Standard equipment on domestic airlines at the present time is the Douglas DC-3 which has a carrying capacity of 21 passengers." The author places this plane in the second of four categories.

Those who expect to see the atmosphere practically saturated with thousands of commercial airliners are due for disappointment. They do not realize how much one airplane can do in the space of a year. A few statistics will clarify the situation.

The unit of measure of passenger travel is the so-called passenger mile. A passenger mile is one person traveling one mile. In the year 1940, which might be considered the last normal year in the trend of transportation, air travel amounted to one billion passenger miles. In the same year Pullman travel by rail was seven billion passenger miles. Intercity coach travel by rail was just under 13 billion passenger miles. Travel by bus was 11 billion passenger miles. Since air travel amounted to one-seventh of the travel by Pullman cars, both sleepers and parlor cars, it represents a very substantial amount of going from here to there. Yet in that year 1940 there were only 338 passenger airliners used in the United States. It is a mere handful compared to the 7,329 Pullman cars then in use. In 1942, the armed forces requisitioned a little more than half of the airplanes in use by commercial airlines so that from that time on the airline business was carried on with a total of only 165 passenger airplanes. Yet by crowding the schedules, operating at full capacity at all times and speeding up servicing, they were still able to maintain the level of 1,389,000,000 in 1942 and 1,632,000,000 passenger miles in 1943.

In the careful analysis and prediction which has been made by Mr. McDonald and Mr. Drew, it is estimated that by 1950 the air travel will amount to about seven billion passenger miles per year. That is about equivalent to the total Pullman travel in 1940. This will be a 700 percent increase in a very few years, but even this will not lead to any phenomenal number of commercial airplanes.

Airplanes, of course, can carry commodities as well as passengers. *It is anticipated that by 1950 first class mail which is going further than some minimum distance, probably about 400 miles, will normally be carried by airplane.* This will represent about a nine-fold increase in air mail transportation over that of 1940.

The third major category of airplane business is the carrying of cargo. Thus far, this traffic has been very much smaller than air mail traffic and microscopic compared to the freight and express hauled by railroad. In the year 1940, 3½ million ton-miles of cargo were carried by air. It is anticipated that by the year 1950 this air cargo business will increase by 31-fold to a total of 110 million ton-miles.

If one takes the weight of average of all these increases in the passenger, mail and cargo traffic, the prediction is that total air business will increase approximately eight-fold by the year 1950. This represents a very rapid rate of increase, but it still does not take very many airplanes. It should be remembered that the total number of commercial airliners at this time is still less than 200, and that by the year 1950 the average airliner will be twice as big as that now being used and that it will probably be 25 to 50 percent faster. To sum it up, the survey indicates that all of the increased business can be handled in the year 1950 by a total of some 570 airplanes distributed in the four categories. That is a long way from the tens or hundreds of thousands which many people seem to anticipate.

Postwar Expectations

In the immediate postwar years it is reasonable to expect that the production and use of private planes will increase substantially, but the immediate growth is not expected to be remarkable. Immediately before the war there were about 20,000 private planes in the United States which were used quite intermittently. For the most part the private plane is still a novelty and sport item. It has not changed very much during the war years. It has the same limitations it had before and is still relatively expensive. It is in about the same category as private sailingcraft or motor boats. There will be definite improvements in private planes within the next few years, but there will not be enough increase in use to bring the price of a utilitarian plane down to the limitations of the average pocketbook. By the year 1950 there may be a several-fold increase in the number of private planes, but there won't be one back of every garage.

The foregoing, which is based on conservative and probably very sound reasoning, admittedly presents a rather gloomy picture for the airplane manufacturer and perhaps even for the airline operator and even some disappointments for the general public. *However, there is ample evidence that in any new industry one can be justified in looking beyond the conservative and sound estimates, and making more rosy predictions backed by the good old American optimism that has been proved right so many times.*

I am reminded that in the year 1910 very careful consideration was given to the ultimate growth of the automobile industry. In that year there was a total of 1½ million automobiles in the United States. A group of experts gathered their data together and predicted that eventually the United States public would become saturated with a total of 7½ million automobiles. But by the year 1940 there were already almost 35 million automobiles in the United States, and it looks as if the trend still is well on the upward swing and will not stop short of less than 50 million cars. *The sound business men of 1910 were wrong in their estimates by at least several hundred and perhaps a thousand percent.* They were that much too low. We can have a certain amount of faith that the sound estimates on the airplane industry at the present time may be in the same category.

The volume of every business, whether it be in transportation or in commodities of some sort, follows a very characteristic growth curve. The amount of business or the number

The Author

Born in Sheridan, Indiana, in 1900, Dr. C. C. Furnas was educated in the Sheridan High School and later attended Purdue University from which he received a B.S. in chemical engineering. He was Big Ten Conference track champion—indoor, two miles; outdoor, two miles; and cross-country —and also was a member of American Olympic team of 1920. He competed in the 5,000-meter race at Antwerp, Belgium. Upon graduating from Purdue in 1922, he received the intercollegiate conference medal for best combined record of scholarship and athletics.

After graduation, Dr. Furnas taught mathematics and track at Shattuck Military Academy in Minnesota. Later he became associated with the United States Steel Corporation at Gary, Indiana, where he did research work on blast furnaces. Following this, he took graduate work at the University of Michigan, specializing in thermodynamic research. The former athlete was awarded a Ph.D. degree in 1926.

After five years as physical chemist with the United States Bureau of Mines, Minneapolis, Minnesota, where he conducted research on gas flow and heat transfer in metallurgical processes, Dr. Furnas went to Yale University as associate professor of chemical engineering. As sidelines, he maintained several industrial consultant positions. He is the author of numerous technical articles as well as the following books: America's Tomorrow, The Next 100 Years, Man, Bread and Destiny (*co-author with wife*), *and* The Storehouse of Civilization. *Dr. Furnas was editor and part author of the sixth edition of* Roger Manual on Industrial Chemistry.

In 1941 and 1942 he worked for the National Defense Research Committee, organizing and supervising defense research work. He joined Curtiss-Wright as director of research in 1942.

of articles in existence rises very slowly during the early years and then takes a sudden upturn and rises very rapidly. As the market becomes saturated it begins to flatten out to a dead level. If these data are plotted on paper, the picture is exactly analogous to the growth curves of the population of countries or the number of bees in a bee hive or the number of ants in an ant hill. It seems to be a sort of a universal phenomenon. There is every reason to believe that the aviation industry still is in the low part of the curve and is just getting ready for the rapid rise which can begin to make itself felt within a relatively few years after the war.

As a representative of an aircraft manufacturing company, I can be accused of whistling in the dark in sounding off on a note of optimism, so it is probably in order to indicate those factors which might come into the picture to justify this optimism.

The principal commodity which the airplane has to sell is speed. It is anticipated that speed will be increased, but even if it were carried to extreme limits the use of air travel will not increase tremendously until substantial improvement is made in several categories. These factors are the same as for any form of transportation: reliability; safety; comfort; cost; appearance.

One of the principal detriments to the greater use of airplanes is the reliability of schedule. In 1941 only 91 percent of the scheduled flights were completed, over the country as a whole. If it is absolutely essential that a person arrive at his destination on schedule he is prone to go by rail or automobile, because of the frequency with which airplane flights are cancelled.

The principal enemy of aircraft schedules is the weather. Mark Twain notwithstanding, you can't do much about the weather. *But it soon will be possible to complete scheduled commercial flights no matter what the atmospheric conditions may be.*

One of the fair-haired boys of this war has been radar, which is an abbreviation for "radio directioning and ranging." Radar is used in many ways. Many of its applications and methods of operation still are secret, but in general it may be said that radar uses short radio waves as a substitute for light rays. This makes it possible, with proper instrumentation, to see and to make many measurements no matter what may be the condition of the weather or darkness. In all probability radar is going to become the basis for automatically keeping a plane a safe distance above obstacles, for exact navigation at all times, for collision prevention, and for blind approach

JET PROPULSION—"If the speed is the prime factor," states the author in the part of this article devoted to jet planes, "then it is already a usable device." Pictured is a Navy AVENGER, specially powered for the take-off by four 330 horsepower rockets. Jatos (Jet-Aided Take-Off) were developed by the Aerojet Engineering Company of Pasadena and manufactured by the General Tire & Rubber Company.

and blind landing systems which will be used in thick weather. There is every reason to believe that this new device plus the utilization of exhaust heat to prevent the formation of ice on the wings and fuselage will eventually make it possible to maintain a reliability of schedule at least as good as that of the railroad and with almost equal safety. *If the aircraft manufacturers seriously take hold of the developments which the longhaired physicists have made during the past few years, we can expect to see a real revolution in air travel begin within the next few years.*

On Air Safety

The average person still seems to persist in thinking that the airplane is a hazardous device. For military or private planes he is partially correct, but the statistics of the situation show that *the commercial airliner is safer than the automobile.* In the year 1941 there was one death for approximately 45 million passenger-miles. In the same year there was one passenger death per 36 million passenger-miles in private automobiles. Hence the airline, in terms of miles traveled, is substantially safer than the automobile. Safety and completion of schedule are the two ends of a teeter-totter. As the percentage of completion of schedule goes up by flying in bad weather, the safety tends to go down; but the airlines must furnish reliability *and* safety. They will, but it will be a severe and expensive technical struggle that will not be completed overnight.

At the present time the average air trip is fairly comfortable unless rough weather is encountered—and then it can be very uncomfortable indeed. The effect of changing pressure on the eardrum in ascending or descending is also a deterring factor with many people. The latter condition can and probably will be corrected by the use of pressurized cabins. Roughness in air travel can be alleviated to an appreciable degree by using larger planes, and in many cases by flying at higher altitudes. It is also probable that improvements will be forthcoming in the control systems which will smooth out the airplane's response to the bumps. A trip in rough air will never be as smooth as silk, but it will be smooth enough so that air-sickness will be a thing of the past.

Noise and vibration are major contributing causes to discomfort. The newer types of engines will almost certainly assure a quiet and vibrationless ride.

At the present time the average air trip costs a little more than five cents a passenger-mile. As the amount of business increases this can be brought down substantially. *It is quite certain that within a relatively few years the cost will be between 3½ and four cents a passenger-mile, and some operators believe that they can bring it down to practically equivalent to the coach fare on railways.* The dollar sign means a great deal to the average person and every small increment in the saving in cost of air travel will greatly broaden the base of probable usage.

The modern airplane has a head start in appearance. There seems to be something

fundamental about the eye appeal of the streamlined contours of airplanes. They are made that way for purely aerodynamic reasons. It is a fine example of functionalism being beautiful. Hence, it is not anticipated that major emphasis will have to be put upon the appearance factor except for the interiors of the plane itself.

The reciprocating engine has probably been brought to its highest state of perfection in the form of the airplane power plant. However, it has become very complicated and very expensive and requires special fuels. Despite the fact that it is of extremely small weight per horsepower, so much power is required to send the large planes through the air that the total engine weight is a severe penalty indeed.

The Gas Turbine

A new and competing prime mover is now rapidly appearing over the horizon. It is the gas turbine. The gas turbine is a very old device so far as the date of conception is concerned, but until recently it has not been practical because it has been too inefficient. Recent advances in metallurgy and in certain features of mechanical engineering have now brought this device well in the forefront of the hopeful developments of the future. Instead of being a complex arrangement of cylinders and special gadgets, it is a relatively simple windmill encased in a housing, rotating at very high speed under the impetus of expanding hot gases which are produced by the burning of fuel. There is a very good chance that it will render the reciprocating engine obsolete for aircraft use in sizes above one thousand horsepower. It will not only be lighter and probably more efficient but will be very much smoother in operation than the engines now in use. This will be an important contributing factor to passenger comfort.

Jet propulsion for military aircraft has received quite a play in the papers of recent weeks. It is a dramatic development, but it is a little more prosaic than the interplanetary rockets of Buck Rogers fame. Essentially, a gas turbine is used to drive a compressor to compress air in which a liquid fuel is burned which is then projected through a long tube. The emerging jet of expanding hot gases gives the forward propulsion to the plane without the use of propellers. It is very smooth in operation but thus far the efficiency is very low at low speeds. Hence, the fuel consumption is very high. However, at high speed it becomes more efficient than the conventional reciprocating engine-and-propeller combination. Hence, if the speed is the prime factor, it is already a usable device. It is not unreasonable to assume that many significant improvements will be forthcoming, thus making it feasible for the higher speed planes that may eventually be used in commercial aviation.

Some airline operators anticipate that there will be a substantial public demand for traveling from coast to coast in the span of five to six hours. This would call for a plane with a cruising speed between 500 and 600 miles per hour traveling across the country with not more than one or two stops. If the public demands this, then it will probably be calling for a jet propelled plane that will fly at high altitudes. However, there will always be the demand for more prosaic travel for shorter distances at slower speeds, and this service can probably be most effectively rendered by airplanes that have the conventional propellers driven by gas turbines with an auxiliary jet propulsion system to make better use of the energy of the fuel and to assist in the take-off from the ground.

The last outstanding development in aviation is the helicopter, particularly as evidenced by the work of Igor Sikorsky. As usual, it has received a great deal of rampant publicity which has overstated the case; but that does not belittle its real significance.

The helicopter is a new kind of aircraft. Its concept is very old, but its application is very new. It has somewhat the appearance of an old Dutch Windmill laid on its side. It has no wings or propeller, but rather it has a large rotor (the wheel of the Dutch Windmill) turning in a horizontal plane above the fuselage which serves the purpose of both. The rotor blades themselves, usually three in number, are essentially long, thin airplane wings that rotate. These whirling blades produce the lift to overcome gravity and also the horizontal thrust for forward speed.

The helicopter can rise straight up out of a confined space, hover as long as desired without any forward motion, or it can move forward, sideways (either side) or backward. It can fly in almost any kind of weather and into or out of very confined spaces. It has many possible uses that the airplane can never hope to meet.

At the present time its use has been confined largely to the Army where it is being used for rescue and observation and is undergoing intensive development. It still is a long way from perfection. It is difficult to fly and not particularly reliable. The helicopter is now at about the same level of development of the airplane of the year 1910.

But none of the problems which still are before the helicopter enthusiasts are fundamentally unsolvable. It is anticipated that its first use after the war will be for special services and for semi-commercial application. It can replace the surf boats of the Coast Guard, it is ideal for crop-dusting, for the control of pests in forest lands, for carrying men and equipment in and out for the fighting of forest fires, for use on cattle ranches and in oil fields. Gradually it will evolve as a means of moderate distance transport for commercial and private use.

Although the cost still is high, it can undoubtedly be brought down very greatly as more and more of them are made. *It should not be thought of as a competitor of either the airplane or the automobile, but as a device which will bridge the gap between the two.*

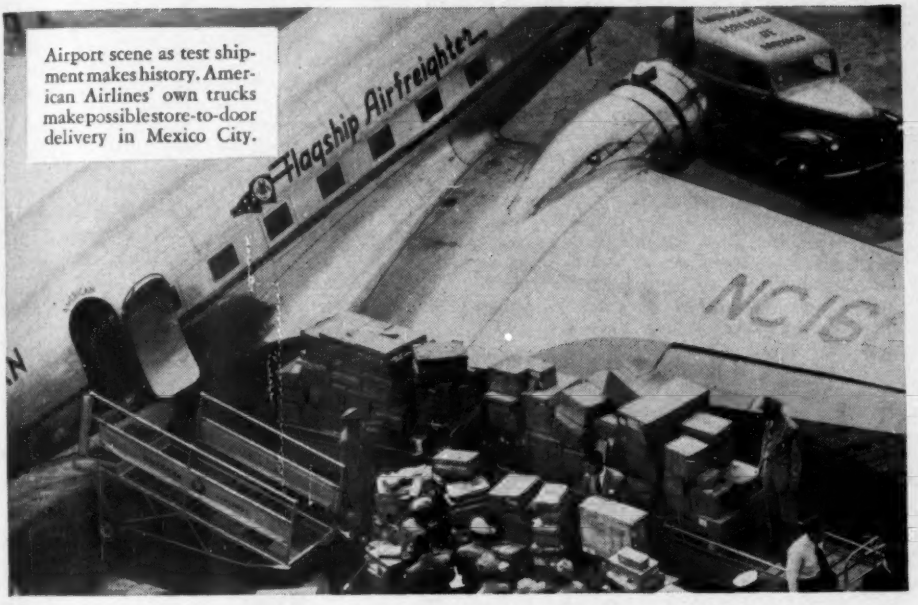
The important developments which have been discussed can lend some substance to the feeling of optimism with which one would like to approach the new field of air transportation. The four significant items discussed will be put through the development mill, first in military and then in commercial aviation. Improved materials of construction and improved ways of putting them together will bring about slow but significant advances in the reliability and weight carrying capacity of aircraft. Improved aerodynamic designs will be forthcoming, along with new and better instruments, controls and all the auxiliary gadgets that go on a flying machine. The improvements will make themselves felt first in the commercial airliners. Then they will steadily percolate down and inevitably effect improvements and cost savings in the field of private aircraft.

The average citizen would like to see the day when he could travel by commercial airlines anywhere in the world, swiftly, with certainty and safety and at low cost. *That day is very close at hand.* A large block of the citizenry would also like to have highly utilitarian, safe, inexpensive private aircraft available, that almost anyone can operate under all conditions for both business and pleasure. That is a very difficult order to fill. The public is going to have to wait a while. The advent of the helicopter brings it somewhat nearer to the realm of possibility but not even that will bring substance to all the dreams.

Though small private aircraft will eventually play an important role in all our lives it does not appear that they are going to have the extensive use or be as important as automobiles. In cost, safety and convenience small aircraft cannot be in the same category with the automobile. They will never be able to compete with the third-hand broken-down flivver. They are inherently more expensive than automobiles, and they must be kept in top condition or they are definitely unsafe. You can lose a fender or even blow a tire on a car with relative impunity, but if you lose a

NEW APPLICATION OF AN OLD CONCEPT—"None of the problems which still are before the helicopter enthusiasts are fundamentally unsolvable . . . It should not be thought of as a competitor of either the airplane or the automobile, but as a device which will bridge the gap between the two."

Preview Shipment of
INTERNATIONAL AIRFREIGHT
Hailed in Mexico City



Airport scene as test shipment makes history. American Airlines' own trucks make possible store-to-door delivery in Mexico City.

American Airlines Announces New Service Beginning Apr. 1st

NOW, American Airlines' Airfreight is being expanded to include International Airfreight. This service provides through transportation of international cargo on one way bill, at new, low rates. Reductions range from 35 to 50 per cent.

Recently, a 4,950-pound preview shipment aboard the first all-cargo International Airfreighter foreshadowed the success of the new service.

Joel Rocha, jr., general manager of the 13 Salinas y Rocha department stores in Mexico had this to say:

"We are convinced that the low rates make this the most economical service possible."

Write now to Airfreight Division, American Airlines, Inc., 100 East 42 St., New York 17, N. Y.

In the shipment are 700 lbs. of drugs from Eli Lilly, Indianapolis; vital war material for the Mexican army; Max Factor cosmetics from Los Angeles; merchandise from Hattie Carnegie, New York, and a shipment from Associated Merchandising Corporation, New York.

AMERICAN AIRLINES *Inc.*

THE NATIONAL AND INTERNATIONAL ROUTE OF THE FLAGSHIPS

wing or a helicopter rotor blade in the air you do it only once. Hence, I do not believe that we are ever going to see a flying machine of some sort for every family. Even a helicopter cannot be landed at the curb and parked in the apartment garage.

Instead of thinking of numbers in terms of tens of millions, Americans will probably have to number their future flying machines in hundreds of thousands, but even that number can be the basis for considerable optimism on the part of both the manufacturer and the user. Naturally, the aircraft manufacturer and the commercial operator thinks in terms of bigger and better business. When the predictions are that the operations will be small he feels gloomy. At the present time optimism is needed, particularly for the manufacturer.

Removing the nose from the grindstone and lifting the eyes to the future horizon definitely has a stimulating effect. For those who say that even the substitution of airplanes for all of the railroad travel would not represent a very large business, I would like to point out that while the total railroad travel of the United States is about 20 billion passenger-miles per year, the private automobile travel is about 400 billion passenger-miles per year—a ratio of about 20 to one. Tapping only a small percentage of that reservoir increases potential air travel by many fold. Moreover, Americans are far from being saturated with travel. The more they have the more they want, and they will go after it as the standard of living gradually rises.

Despite the fact that Americans usually think almost entirely of themselves, they amount to only six percent of the world's population. How rapidly the benefits of aviation spread to the other 94 percent of the people of the world depends in no small measure in how good a job we do in the manufacture and the use of airplanes here at home.

By the time hostilities cease there will have been great contractions in the present aircraft manufacturing business. Then will begin an intense struggle for survival of the companies now in the field. It will be quite analogous to the automobile business after the boom days of the '20s. Some of the newcomers will survive, some of the oldtimers will pass out of the picture. But whatever their size or age the survivors will have three characteristics in common. They will have competent technical staffs, imagination, and courage to jump into the newer developments with both feet.

Beginning about now the race is being run over a tough obstacle course and will continue until about 1950. There will be a great contraction in manufacturing schedules, but the ones who stay in the race will take this as an opportunity to embark on expensive and difficult development programs. They will boldly plant and cultivate the seeds of new ideas and prepare for the five-year harvest. Those who do less will be elsewhere doing other things when harvest time comes. Out of this struggle will come more, better and less expensive aircraft which will make the latter half of the Twentieth Century the beginning of the real Air Age.

Agriculture Beckons

(*Continued from Page* 13)

the pilot a report of the fire's progress, what is needed to fight it, how many men are necessary, and other details."

The air transportation of fresh fruits and vegetables will increase with leaps and bounds after the war. Vitamin-conscious America will heed the fact that a much higher vitamin content is obtained in most airborne foods. A recent test supervised by Dr. Spencer A. Larsen of Wayne University showed interesting results in three categories of tomatoes: hothouse, railborne, and airborne. The Vitamin C content of the hothouse tomatoes was 13.18 percent, railborne 14.43 percent, and airborne 25.45 percent. (For the complete story, read *Vitamins in the Air,* in the February, 1945, issue of AIR TRANSPORTATION.)

American agriculture is following the lead. It recognizes a great future in the air; and it is going to see to it that a large number of our returning youths, armed with the know-how received in the air corps of the Army and Navy, will be given rich opportunities in commercial aviation.

Flying Flowers

By DICK ROSS

PERHAPS one way of putting it is "caught with their plants down"; but whatever the term, the Sim Carnation Company of Saugus, Massachusetts, America's largest propagators of carnations, came up smack against a ticklish problem a short while ago—a problem which, had it remained unsolved, would have cost the company and its customers a pretty penny.

Wartime exigencies had caused the cracking down of a temporary express embargo, and among the sufferers was the Sim outfit which had thousands of plants packed and ready to leave. But there was an alternative—airfreight—and Sim was quick to seize the opportunity, a major part of the waiting plants going to the airport.

There popped up, however, the question of shipping charges. Airfreight costs more, Would Sim's customers, who normally received the carnations by surface means, consent to pay the higher rate? The company took a frankly pessimistic view of this; and, in order to insure prompt delivery of the flowers, prepaid the charges.

The result may be best expressed in the words of Kenneth F. McCully, general manager and treasurer of the company, headed by William G. Sim:

"We were pleasantly surprised when all of these customers paid the charges in full, thanked us for sending the plants by air, and instructed us to make future shipments in that way."

While it remains true that airfreight still is in the process of development—in the case of the Saugus flower growers it was one of emergency shipping—there nevertheless is a definite desire to utilize the air when the economy of such means of transportation becomes evident. But economy is obtained in more than one way.

Emergency shipping is, of course, a form of economy. Similar economies are a process of speedy transportation which would reduce the danger of cancellations, price fluctuations, and transit losses, as well as the extension of the selling season. All that lies in the air—facts which were brought out in a recent survey of key business executives throughout the United States.

The Sim Carnation Company operates at the present time 15 greenhouses, all in Saugus. In spite of the current wartime shortages in materials and manpower, Sim roots nearly two million carnation plants a year which are shipped to other growers in all parts of the

EASTER PARADE—The good old bucket brigade comes into play as Pan American World Airways' cargo handlers at the marine terminal, LaGuardia Field, unload a shipment of 25,000 Bermuda lilies destined for the annual Easter trade. PAA recently announced substantial cuts in rates on certain types of flowers imported into the United States.

THE ONCE-OVER—Imported Bermuda lilies are inspected by Pan American World Airways' men shortly after the flowers' arrival by CLIPPER at the marine terminal, LaGuardia Field. The lilies were sent home by overseas sailors and soldiers.

world. Not without its postwar plans, the company would double this quantity.

Before Der Schoene Adolf—he's awfully battered now—blitzed into Poland to set the pace for the Second World War, Sim was doing a landoffice business in Europe. Things looked particularly good in Holland. England, Denmark, Switzerland, and Sweden were satisfactory customers. Flowers left Saugus for points as distant as Rumania, South Africa, and the Philippine Islands. Most of these shipments went by parcel post.

Europe has been smashed consistently since 1939; the wide Pacific areas have felt bomb and shell since late 1941 and early 1942. Growers in the war-affected territories had their stocks destroyed by enemy action, or were forced to abandon them. Complete new stocks will be necessary after the war. It is a foregone conclusion that most of these will originate in the United States.

New Record

Two-and-a-quarter tons of lily buds and bulbs from Bermuda, intended for the Easter trade, were delivered to the marine terminal at LaGuardia Field on March 18 by a Pan American Airways Clipper from Miami. The airline said the shipment was the largest of the kind it had ever carried. There were 83,975 buds and bulbs in the load, which filled the cargo compartment and all other available space. The clipper also carried 41 passengers and 77 pounds of mail.

Growers in the liberated parts of Europe have not been lethargic. Already letters have crossed the Atlantic indicating their desire to resume "business as usual" just as soon as it becomes feasible.

"With the strides that have been made and will be made in air transportation," Mr. McCully told this magazine, "we are planning to make future shipments by air."

He went on to say:

"The carnation is a cool crop; and because it does not grow well in warm climates, we never had paid much attention to Central or South America. However, about four years ago, we began to receive inquiries from florists in and around Mexico City. We made a few trial shipments and carried on enough correspondence to cause us to realize that because of its altitude, carnations could be grown well in Mexico City and in several other principal cities south of the border. We contacted several representatives of Latin American countries in the United States, and visited some growers in Mexico City. We also communicated with Argentina, Uruguay, and Bolivia.

"In the meantime, we had received so many orders for plants, and so many inquiries, that we thought it advisable to publish a price list in Spanish. We did not expect this to pay for itself at once, but planned to lay the groundwork for future expansion in Latin America. However, the first year that this Spanish list was disseminated, our business increased so that it proved to be a splendid investment which paid immediate and excellent returns. This year we printed another, and our business continues to grow."

Shipments of carnations to Mexico is past the trial stage. This season—that is, up to about the middle of last February—some 50,000 carnation plants went to that country alone. *And all of them went by air!* Sim experimented with ordinary express, "but the delays encountered jeopardized the safe arrival of the plants." Trial shipments to Bolivia and Uruguay are now in progress. An appreciative eye is cocked Argentina-way, but the Saugus carnation growers would wait out the current economic and political difficulties.

A few months ago the Mexican President ordered 2,000 carnation plants. These were shipped from Boston by American Airlines' new airfreight service. On the same plane were loaded several other flower shipments destined for Mexican florists, and a box containing 400 carnation blooms for the President of Mexico—an expression of good will by the New England Carnation Growers' Association. Incidentally, these were the first plants and flowers to be shipped by AA airfreight from the New England area.

The open assertion has been made that with the end of the war there will follow a lively interchange of plants, flowers, bulbs, and seeds by air between the United States and Latin America. An even greater business between this country and those in Europe is likewise envisioned. Cuba and the West Indian islands already are good customers.

Prior to the advent of international air transportation, the importation of orchids and certain types of cut flowers into the United States was quite impractical, since these were extremely perishable. In the early days, high air express rates necessitated only special import orders; but these rates have been scaled down.

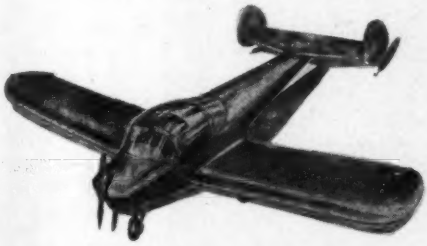
Last January, Pan American World Airways sliced the 55 cents per pound rate of fresh cut flowers from the islands of Bermuda (usually Easter lilies) into the line's New York Terminal, to 28 cents—a reduction representing just a shade this side of 50 percent. Orchid plants from LaGuaira, Venezuela, to Miami, if shipped in lots of not less than 55 pounds, are transported for 54 cents per pound—a saving of 21 cents on each pound.

There are profits in the air. All the signs point in that direction, and the flower growers are right in the groove.

Aeronca Announces The Chum, a Private Plane With War-Born Features

What is described as a new two-place, two-control, spin-proof, low-wing personal plane, with tricycle landing gear and all-metal fuselage, and going by the name of *Chum*, has been announced by John W. Friedlander, president of the Aeronca Aircraft Corporation. Production on the new lightplane will start as soon after the war as conditions permit.

It is powered by a 75 horsepower engine, will cruise at 108 miles per hour, fly 470 miles without refueling, land at 50 miles per hour, and have a rate of climb of 650 feet per minute.



AERONCA'S CHUM — Announced as a "foolproof" lightplane, this postwar CHUM will be found carrying the tricycle landing gear of the SUPERFORTRESS and LIGHTNING. It will be able to fly 470 miles without refueling.

Aeronca, which designed, built and flew the first American lightplane 17 years ago, revealed that the *Chum's* special features include large automobile-type doors, deluxe interior, enlarged baggage compartment, hydraulic brakes, and ball bearing controls. A starter and generator will be standard equipment. The initial announcement stated that the *Chum* "indicates how well certain warplane features may be adapted to postwar private flying." The tricycle landing gear found on B-29 *Superfortresses* and P-38 *Lightnings*, among others, has been adapted to the latest Aeronca.

Officials declared that the plane is now in the mock-up stage and added that the prototype should be flying soon. Additional details on the *Chum* include a wing span of 29 feet, a gross weight of 1,300 pounds, top speed of 120 miles per hour, and baggage capacity of 70 pounds.

New Mark Set

A coast-to-coast, point-to-point record of 25 minutes' actual flying time from Daytona Beach to Tampa, made recently by a National Airlines plane, was piloted by Captain E. A. Springer. He flew an NAL Lockheed *Lodestar* at an altitude in excess of 8000 feet, where prevailing winds were the fastest. For the 25-minute period the *Lodestar* flew at the almost unprecedented time for this plane of 302 miles per hour.

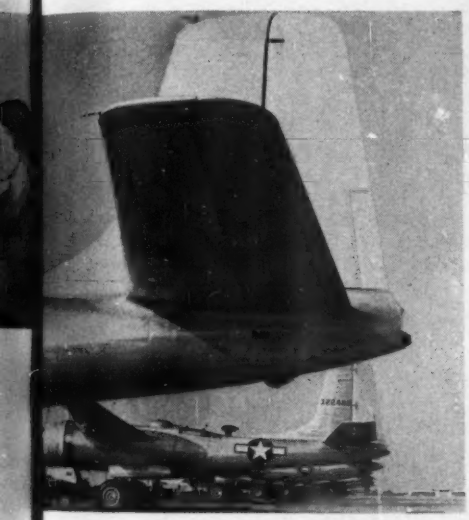
NEWS and VIEWS

OFFICIALS ON A VISIT—Percy de F. Warner, of the United States State Department Aviation Desk, and Robert Bradbury, civil air attache to Mexico City (left and center), inspect a Cyclone 18 engine as Lieutenant Commander Ralph Curren, civil attache to Cairo, stresses a point. The picture was taken during an inspection tour of the Wright Aeronautical Corporation's Wood-Ridge, New Jersey plant, where engines for B-29s are manufactured.

MARQUIST HEADS THE LIST—Miss Sarah Marquist accepts a certificate from V. E. Chenea, Pan American World Airways' vice president and general manager, upon completing the traffic training course offered to accredited travel agents by PAA. She was the first agent to complete the course.

A TRUE FISH STORY—Nine boxes of Rainbow trout from Colorado Springs, representing the first air express shipment from that point, are loaded onto a Railway Express Agency truck shortly after their arrival at Love Field, Texas. The airborne trout, precooled and wrapped in wax paper, traveled in regular cardboard cartons without refrigeration.

PLANE-TRUCK COORDINATION—Nearly three tons of fresh tomatoes, asparagus, and other vegetables are unloaded from one of American Airlines' AIRFREIGHTERS and transferred to a waiting refrigerated White truck for immediate distribution to the Fisher food chain in Cleveland. A second load of almost an equal amount of vegetables arrived in a United Airlines CARGOLINER. The vegetables were ready for sale less than 48 hours after they were picked on the West Coast.



READY FOR ACTION—Lined up and rarin' to go are a number of Douglas INVADERS, known to the Army Air Corps as the A-26. The new plane is described as an all-purpose bomber.

SIXTEEN OF A KIND—Mrs. J. R. Ascoli, wife of an assistant director of the Federated Co-operatives of the Province of Quebec, Canada, poses with their 15 children upon arriving at Miami after a flight by PAA CLIPPER from Kingston, Jamaica. The ages of the Ascoli children range from four to 25. Rene (second from right) is a veteran of the British Army.

AIRDOM

By Richard Malkin

(*Trade Mark*)

ESQUIRE'S HELICOPTER SURVEY

Last Fall, *Esquire* Magazine, in an effort to learn "to what degree the helicopter will be a factor in the private plane market after the war, its advantages and disadvantages, the number that might be sold and probable price, etc.," distributed a total of 148 questionnaires. More than half were received by aircraft manufacturers, the balance going to helicopter manufacturers, and editors and publishers of aviation periodicals. A shade less than 40 percent responded—a good cross-section, since the replies were proportionately distributed among the manufacturers of aircraft and helicopters, and aviation publications.

That there were so many negative answers throughout all the questions is interpreted by *Esquire's* Research Department as indicative that "fixed opinion is lacking on this subject."

Of the 30 aircraft manufacturers faced with the point-blank question, "Is your company going to make helicopters after the war?" only *one* replied in the affirmative. Nine out of 17 helicopter manufacturers declared that they would continue making them in peacetime; one said, "No," and the balance of seven left the space blank. Forty-one percent of the helicopter men and 20 percent of the aircraft men did *not* file answers. It is interesting to note that both cathegories of manufacturers giving either an affirmative reply, or none at all, formed a combined total of 49 percent—which means that more than half have no plans for entering into the postwar helicopter business.

"To what degree do you believe the helicopter will be a factor in the private plane market after the war?"

The biggest group, forming 42.4 percent, thought it would be slight. The second largest percentage, however, was recorded by manufacturers and publications men who thought the helicopter would present itself as a serious factor. Forming 20.3 percent of the

HELICOPTERS ON OUR MIND—Will you manufacture helicopters after the war? "No!" said 29 out of 30 aircraft manufacturers answering ESQUIRE'S questionnaire. "Yes!" said nine out of 17 helicopter manufacturers. Above is a Navy "heely" fitted with pontoons.

total, this group was equally divided between helicopter manufacturers on one hand, and aircraft manufacturers and aviation publications on the other. Seventeen percent said "fair," five percent thought it would have no effect, while 15.3 percent refrained from answering.

Those who did not consider the helicopter to be much of a factor offered various reasons to support their claim, chief of which was that it was too costly to own and operate. Nearly as many respondents said that it was not yet technically perfect; the third and fourth groups respectively stated that the helicopter was too slow and too complex.

Among those gazing upon the "heely" (Igor I. Sikorsky's pet term) as a serious factor, the following three reasons were given first importance: utility, small take-off and landing area requirement, and safety.

The median estimate of the number of helicopters to be sold in the first postwar year is between 100 and 500; the second year, between 1,000 and 2,500; the third year, between 2,500 and 5,000.

A helicopter selling for $1,000? . . . According to the median estimate, between 100,000 and 200,000 would have to be produced to fetch this price. Production of between 10,000 and 25,000 would find it retailing at $3,000; and between 1,000 and 2,000, a price of $5,000. Thus, judging from the estimates of the respondents, the price of a helicopter will drop $2,000 between the second and third postwar years.

At this point, it seems apropos to quote once more from Charles L. Morris' recent book, *Pioneering the Helicopter*, which was reviewed in this column two months ago. Impatient with those who would predict the postwar price of the helicopter, he wrote:

"To begin with, can you confidently assert what a dollar will be worth after the war? Will a pair of shoes cost $6 or $2 or $20—or perhaps even more? Will a low-priced car still sell for $800?"

WAR: A SPRINGBOARD

One is not necessarily a denizen of the realm of profundity when he states that the war has been aviation's greatest springboard. That fact is as pat as the sum of four derived from two plus two.

The achievements are so many that they defy adequate expression here, within the confines of word and page; for these, all too sadly, are limited by space. But these accomplishments, as they are made known, are ever-fresh and bring along with them an en-

thusiasm which will be an important holdover in the postwar era. Commercial aviation is partaking of many of the wartime findings and innovations; many others, probably, await further development for civil use. It is like a multi-faceted diamond glittering in a hundred spots.

The flying soup kitchens which the Army Air Force has developed to a startling degree of precision and efficiency may find postwar use in a dozen directions. Recently an aerial convoy of glider-towing C-47s dropped men and supplies on a 1,000-square yard parade ground at the San Antonio (Texas) Aviation Cadet Center. Among the parachuting troops were mess personnel. Hardly had the latter reached terra firma than the gliders' nylon tow ropes were cut, and the heavily-laden motorless transports came in for smooth landings.

Out of the bowels of the big gliders came refrigeration and kitchen equipment. The mess personnel plunged into their work, and within less than an hour of the first parachute jump, a hot, steaming meal was ready to be dished out. Following the conclusion of the meal and with the reloading of the gliders, the C-47s appeared once more, swooped down on the area, and snatched up the "flying kitchens" to tow them to a new location.

And then there is the unusual work of Lieutenant Colonel Norman D. Vaughan of Hamilton, Massachusetts, youngish-looking Chief of the Arctic Search and Rescue Section of the North Atlantic Division, Air Transport Command.

A member of the Byrd Antarctic Expedition of 1928-30 and the earlier Grenfell Mission in Labrador, Colonel Vaughan's experiences read like a darn good movie script. (In fact, the book, *Island in the Sky*, is based on one of his experiences.) At a recent press conference in New York, he revealed that he and members of his staff transported 160 Eskimo huskies, sleds, and special equipment in a number of C-54s, on a transatlantic flight on only a few hours' notice. (What about England's six-month dog quarantine?) Shortly thereafter, the dogs and sleds were utilized most effectively in the evacuation of the wounded from snowed-in wooded areas in France.

Lt. Col. N. D. Vaughan

Colonel Vaughan declared that the shortest route was taken in order to raise the payload. The dogs, he said, were very quiet at high altitudes. After the ocean hop all the animals ate well. Incidentally, there are facilities for the parachuting of complete dog teams as well as 24-foot rescue boats.

THE DISTAFF SIDE

Last January, a department of this magazine reported the election of Jacqueline Cochran to the Board of Directors of Northeast Airlines, adding that she "has the distinction

Jacqueline Cochran

of having become the first woman to serve as a director of an air passenger transportation company."

But the record has an uncanny way of reasserting itself. In this case, it was in the form of a letter from P. E. Bewshea of the British Overseas Airways Corporation. As a result, Miss Cochran holds the title for the United States only.

According to the information supplied by Mr. Bewshea, Wilson Airways was founded in 1929 by Mrs. F. E. Wilson of Nairobi, Kenya Colony, East Africa. She started the line with but one plane, and within two-and-a-half years Wilson Airways boasted a fleet of eight. Besides organizing the air mail and passenger transportation system spanning the jungle and mountain terrain, Mrs. Wilson established a badly needed air ambulance service—a decision which was instrumental in saving many lives. In 1933, she was awarded the Order of the British Empire for services rendered to the cause of aviation in East Africa. Wilson Airways has since been absorbed by Imperial Airways.

AVENGERS ALL—Proudly holding a scroll signed by the personnel of Fort Riley whose war bonds bought the BATAAN AVENGER is its crew: (Standing, left to right), Lt. Gerald K. Kunkle; Lt. Joseph R. Novak; Lt. James E. Gentry; Lt. John J. Ullman; Lt. Bertram J. Weinberg; (kneeling, left to right): Sgt. Sidney Liljeholm; Cpl. Arthur F. Del Signore; Cpl. John C. Ward; Cpl. Melvin Warshaw; Cpl. Daniel H. Zyry; Cpl. Robert S. Zeigler.

Another is Pauline Gower, who was appointed to the directorship of BOAC two years ago come next month. With Great Britain's declaration of war in 1939, Miss Gower became commandant of the Women's Air Transport Auxiliary which ferries 120 different types of planes from airport to airport. From a nucleus of eight women she built up the organization to more than 900. One need but remember the historic Battle of Britain, when Air Marshal Hermann Goering made his unsuccessful bid for supremacy in the air in conjunction with the high-riding Nazis' pre-invasion moves, to appreciate the work of that group of valiant women. Prior to the war, Miss Gower's own short-hop service, in which she served as pilot, carried over 33,000 passengers.

Miss Cochran of NEA is a noted aviatrix herself. She holds numerous world air records, and serves with the Army Air Forces as Director of Women Pilots and head of the WASPS. The late Amelia Earhart was an intimate friend of NEA's woman director.

LUCKY SEVENTH

Frankly, this is a war bond story. The Seventh War Loan is on tap—the Lucky Seventh, we prefer to think. For, as this is being written, the day seems to be within fingers' reach when it will be proper to say:

"Two down—one to go!"

It took a sneak attack on Pearl Harbor by the Japs to thrust America into the war. There were defeats in the beginning. Probably the one to be remembered most is the infamous Bataan Death March. Here was Jap sadism at its worst: a forestaste of Nippon's proposed Co-prosperity Sphere.

But Japan's fortunes of war, though swift and profitable, were not of extended duration. There came Coral Sea and Midway, and the first invasion of enemy-held land—Guadalcanal. Since then, it has been a direct march to the heart of the island empire itself.

Not many months ago the civilian and military personnel of Fort Riley, Kansas, launched a war bond drive. When the deadline was reached, the adding machines began to work; and when the adding machines terminated their clacking functions, the war bond dollars were found to be the equivalent of the purchase price of a B-29.

Thus was born the *Bataan Avenger*. . .

Fort Riley was exceedingly proud of the plane and its 11-man crew—lads from the East, South, and Midwest. They were wined and dined by the gloating fort; and later, while thousands watched and cheered, the *Bataan Avenger* swung for the skies like an eager giant out to underscore its own name. Suddenly an object dropped from the plane and hurtled toward the ground. It was a drop-message addressed to the "foster parents" of the plane:

". . . The *Bataan Avenger* was built in Kansas, was bought in Kansas, is leaving from Kansas, and the *Bataan Avenger* will triumphantly return to Kansas. . ."

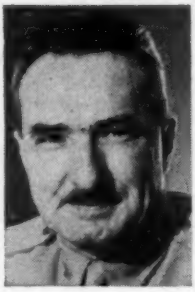
The plane was well named. Only the other day a note was received from one of its officers:

"We are in the Marianas now. . ."

Any bonds today?

The ATC Paves the Way

When it comes to talking about air cargo problems, who can do a better job than the chief of the biggest outfit of airfreighters in the world? Sheer guts, stick-to-it-iveness, sweat, and vision have given the Yanks and their Allies a peerless transport job. What were the problems overcome? What problems remain to be solved? And how does the work of the ATC affect tomorrow's "commercial freighters of the skies"? Let the colonel tell the story in his own way.



By COLONEL HAROLD R. HARRIS
Chief of Staff, Air Transport Command

It was in the November, 1943 issue of *Air Transportation* that Colonel Harris' first article on the cargo problems of the Air Transport Command was printed. Almost a year-and-a-half have elapsed, with the results that the ATC chief's present article may be considered the very latest word on the subject. Certainly it contains considerable valuable information from nearly every angle of air cargo transportation. It was the topic of Colonel Harris' address last month before the American Society of Mechanical Engineers at New York City—*The Editor.*

IT is a little less than three years ago that the organization now known as the Air Transport Command embarked upon its career of handling, in increasing quantities, air freight. I should like to point up those words *air freight*. For until that time—with the exception of a few isolated instances in remote parts of the world—there had never really been any air freight as we know it today in our routine business of supplying the Army establishments in the far-flung corners of the world.

The mere use of the word freight brings to mind the great, heavy cases of merchandise that for many years have been the exclusive franchise of railroads, steamship lines and, more recently, highway trucks. For a variety of reasons which need not be brought into this meeting, but which made cold, common sense to the hardboiled traffic manager whose job it was to guard transportation dollars, most of the commodities transported by air until the war had been small packages of high value—high profit merchandise, luxury items, or other small articles such as replacement parts for machinery, shipped because of breakdowns or for other urgent reasons.

Suddenly the ATC was confronted with the problem of moving *real* freight; freight that ranged in size from a tiny package of machine screws to the fuselage of an airplane or great Diesel generator sets weighing four tons or more. The aircraft in which we were forced to carry this freight at the beginning had been designed primarily as passenger aircraft or as tactical aircraft and were conversions, to use the kindest term possible.

In the process of such conversion, all too often, the matters of interior design, size of doors, type of floor and provisions for securing of loads, were either forgotten, or, if not forgotten, represented the ideas of a great number of individuals who had had no previous experience in the transportation of very heavy cargo by air.

The results at first were far from encouraging. A DC-3 with ample cabin space to accommodate freight of considerable cubage would, as often as not, be handicapped by a door through which it was difficult to pass a well filled mail bag. On the other hand converted bombers quite frequently presented the opposite problem—that of a door through which an incautious GI might well drive a 6x6 truck, and with cabin space designed primarily for the high density, low cubage of bombs.

Ground handling equipment and methods were equally primitive, and ranged from a line of Negro bearers, affectionately known as

LOADING CARGO—A sleek C-54 attached to the ATC waits as a crew loads it with precious cargo destined for overseas. Note the pulley arrangement to facilitate handling. Last year the cargo tonnage transported by the ATC could fill a freight train stretching from Boston to Portland, Maine.

"wogs," to huge crash trucks with 8½-ton prime movers, and in no case was the size of cargo or the door height anywhere nearly in approximation with the top of the bearer's head or the bed of the truck. Freight was either laboriously handed up or precariously lowered into the cabin. All this involved manpower lots of it, and far more time than we had to spend on the ground.

To complicate the situation still further, aircraft designers began to come up with new airplanes designed primarily for the transportation of air freight, designed well in all but one respect (and I refer here to the well known, reliable giant of the ATC—the DC-4, or C-54 as we know it). It was early discovered that on this otherwise excellent airplane, the loading door was located some four or five feet above the reach of the normal man or his truck. Heavy equipment and large crates simply would not lend themselves to being tossed lightly in the air and caught by a receiver standing in the door.

Some Expedients

Meanwhile, a great many temporary loading expedients had been put into use, among them electric cranes, warehouse type fork lifts and platforms which were set up along side the aircraft and provided a staircase effect up which freight might be manhandled; but none of these expedients was the complete answer. Cranes were too slow and involved the placing of slings around each piece of freight in order to swing it into place and, as frequently as not, succeeded in carrying away the upped part of the door while attempting to swing the freight into the cabin; warehouse fork trucks, with their great weight and small, hard rubber tires, were prone to sink to the crankcase in the mud and sand of early fields; and loading stages were slow of erection and even slower in loading.

The use of power conveyor equipment was virtually precluded by the limitations placed upon the capacity of this type of loading device. For handling freight within certain size ranges it possesses unquestioned advantage, but in the operations of the ATC, the only thing that can be definitely foretold is that tomorrow will bring a minimum of one new problem in the loading of aircraft. Accordingly, any attempt to use power conveyor loaders was relegated to the background for development at a future date when the need was less pressing for immediate equipment to do the job.

In addition to all this, whatever equipment was designed must of necessity be capable of being itself air carried—since at this stage of the game ATC was, as often as not, the only means of transportation into many of the fields we operated.

As a solution to this problem, there was designed, in conjunction with a large manufacturer of material handling equipment, a hybrid which combined the hoisting features of the fork lift with the power, speed, and flotation of a large pneumatic-tired truck. This somewhat odd appearing gadget was readily disassembled into three major units and driven aboard an airplane under its own power, so that it could immediately be placed in operation at even the most advanced places. Used with bins which held a large bite of the load, and able to serve as its own tractor, this machine pulled loads to planeside and then, doubling in brass, picked those loads up and placed them, not along side the airplane, but actually inside the cabin. It is today performing an excellent job on every field throughout the ATC's world-wide system.

Quick Loading

As a consequence, the C-54 and C-46 are now rapidly loaded with freight ranging from 20-pound bags of mail to large aircraft engines on dollys, power equipment, ordnance, and every variety of heavy freight. As a corollary, the unloading has simplified and speeded up to the same degree.

Later, for those fields where only a few aircraft were loaded at a time, the versatile 6x6 "Jimmy" or 2½-ton, six-wheel drive truck, was fitted with a body which could be raised to any door height up to twelve feet. This made it possible to carry an entire load to planeside and work it aboard much as though the airplane itself had been brought alongside a loading dock. While not quite so rapid in the handling of heavy freight and possessed of the inherent disadvantage of requiring one or more trucks for each airplane to be loaded, this type of vehicle has, in a somewhat more limited and specialized fashion, proved up very well in air transport operations.

Equipped with these two devices and bolstered by a score or more of trailers, roller conveyor sections, and other gadgetry which was daily developed to expedite its work, the ATC is able rapidly to load and unload aircraft of virtually any type foreseen in the near future, and to handle freight of any dimension or weight which can be loaded in those aircraft.

Different Categories

From the standpoint of traffic movement and handling, air cargo falls into several types. Heavy, bulky pieces constitute one of our principal problems. Aircraft engines, oil drums, barrels of cement, jeeps, bulldozers, fork lifts, and other heavy machinery and parts are difficult to handle.

Next to heavy cargo, odd-shaped pieces cause us the most concern. These are not so hard to move into the airplane but immediately a stowage problem is presented. Steel pipe and bars, propeller blades, aircraft cowling, turrets, wing tips, ailerons and strategic materials in sacks are awkward to stow and tie down. Frequently *great bulk and lack of weight* is the principal problem. This type of cargo is difficult or impossible to stack.

Fortunately the greater portion of air cargo can be packed in containers of conventional size and shape. Most of these pieces can be moved and lifted by hand which makes for quick and efficient loading. Heavier pieces are, of course, placed on the bottom of the pile and stacking makes possible efficient use of cabin space. Most aircraft and automotive parts, food and general supplies of all types, together with some strategic materials moving back to the United States, fall into this classification.

Extra Specials

Some cargo requires special handling and attention. Explosives and acid require particular care in stowing and tie-down to insure against landing, take-off and rough air shocks which may result in shifting. Serums and other types of medical supplies require icing or other special handling.

A surprising volume of very small pieces is handled, which often causes as much trouble as the large pieces. A box of electrical fuses is a small package but may put several grounded airplanes back to work. Small pieces have an unfortunate habit of getting lost in spite of special cabin sacks, and are particularly aggravating when temporarily AWOL at an intermediate stop where the contents are badly needed.

In the summer of 1942 it became known that a great many temporary structures were being erected overseas using crating lumber removed from shipments which had been flown across the ocean by air. Now crating lumber, at best, has little, if any, intrinsic value for re-use, and the thought of transporting it many thousands of miles at high cost by air when it was the material *inside* the box that was vitally needed, was enough to give pause

"JIMMY" IN ACTION —This versatile six-wheel truck is fitted with a body which can be raised as high as 12 feet. According to Colonel Harris, it made it possible "to carry an entire load to planeside and work it aboard as though the airplane itself had been brought alongside a loading dock." The ATC plane taking on cargo is a C-46.

MORE SPACE FOR YOUR

AIR EXPRESS SHIPMENTS

FOR FASTEST DELIVERY, ship early in the day—as soon as package is ready. War traffic comes first, of course. But with more planes being put into Airline service, more space is available for other important goods.

WHEN TIME MEANS MONEY, Air Express charges are cheap. A critical shipment weighing 25 lbs., for instance, may be the means of saving days and thousands of dollars. Yet it travels more than 1,000 miles for only $8.75—at a speed of three miles a minute, with special pick-up and delivery in all U. S. cities and principal towns.

THOUSANDS OF FIRMS everywhere are using Air Express with efficiency and economy. Service is direct by air between hundreds of airport towns and cities, while rapid air-rail schedules serve 23,000 off-airline points in the United States. Direct service to scores of foreign countries.

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to the most optimistic advocate of air freight. Research began immediately, and has continued upon the matter of just how much, if any, packing is needed for air transportation. Several factors dictated a minimum of packing; several factors, that is, aside from the paramount one of the saving of valuable weight and space for the cargo itself rather than for non-essential packing material. *For one thing, air freight rarely, if ever, spends several weeks in the open on a dock awaiting the loading of freight car or steamship. It moves fast, and protection against the weather is therefore limited to the prevention of damage to the material over a short period of time. Air freight, again, is not handled as roughly as freight shipped by surface means.* The structure of the airplane itself precludes throwing, dropping and general manhandling of freight when being loaded or unloaded. Added to these points is the tacit importance of air freight. Everyone, freight handlers included, realizes that the shipment he is handling must be a pretty important piece of material or it would never have been sent by air in the first place. This general feeling contributes to better handling than is customary in other forms of transportation.

Educating the Shipper

Approached in this light, the extremely heavy packing, using a great deal of lumber such as is customary for shipments which must be lowered in slings into the holds of cargo vessels and which may bear the weight of many tiers of freight stacked on them in their hold, is completely unnecessary. The education of shippers in the use of light-weight packing materials, notably the V-grade, weather-proof fiber containers and light plywood crating, was a difficult task at best. Air transportation represents a relatively small portion of the material being shipped overseas and a great deal of inertia was encountered when special preparation for shipments by air was requested. Realizing that this education might well continue through the course of the war before concrete results were obtainable, the ATC instituted a new departure in freight handling—the repacking by the carrier of freight which should have been properly packed by the shipper in the first place. This activity requires much in the way of material and personnel, but the results have proved startling. For example, in three months *repacking for air shipment effected a weight saving of 1,627,500 pounds.* Resolving this saving into payload, it represents some 400 trips carrying real freight instead of lumber. If we assume an average freight distance of some 2,000 miles, this weight saving represented 1,628,000 ton miles. Figured at ten cents per ton mile—we saved in three months better than $162,000. Spread this over the entire period of operation and the saving resulting from repacking is startling, to say the least.

Recently, the results of constantly hammering the shippers on the saving to themselves

The Author

With 5,000 solo hours of flying time to his credit at the time he resigned (September 2, 1942) as senior vice president of Pan American-Grace Airways to accept a commission as colonel in the Army of the United States, Colonel Harold R. Harris has a background encompassing many phases of military and commercial aviation.

Chief operations officer for Panagra at the time of his resignation, he served first as Plans Officer for the Air Transport Command. Subsequently, he served as Assistant Chief of Staff and Deputy Chief of Staff until March 8, 1943, when he was named Commanding Officer of the newly-activated ATC's Domestic Transportation Division. On October 8 of that year he was returned to ATC headquarters as Assistant Chief of Staff in charge of operations and training, and on August 21, 1944, he was promoted to his present post—Chief of Staff of the ATC.

Colonel Harris began his flying career during World War I, when he was stationed in Italy. A lieutenant at the time, he was part of a group of Yank flyers among whom was Major Fiorello H. LaGuardia, New York's present mayor.

From 1918 to 1925, he was test pilot and chief of the flight test section of the Army Air Corps. He was one of the builders of the first lighted airway, an 80-mile stretch between Columbus and Dayton, Ohio. He is the first Army man to have saved his life in an emergency parachute jump. At one time, in 1926, he held 13 world flying records.

Leaving active duty with the Army, Harris flew for a pioneering commercial enterprise—a job which took him to South America. His progressive ideas made him an instrument in the formation of Peruvian Airways, Inc., which later came Pan American-Grace Airways. For 14 years Colonel Harris watched this airline system grow from its first short domestic system operating between Lima and Talara—in 1928—to its present size—8,000 miles of air routes serving eight countries, daily schedules from the Canal Zone to Buenos Aires, and flying the Andes regularly over four different routes.

by the use of lighter packing have begun to bear fruit, as is witnessed by the gradual reduction in the number of shipments which must be repacked coupled with an equally gradual increase in shipments arriving at the Port of Aerial Embarkation properly packed for maximum protection and minimum weight. *To the commercial shipper of air freight, this subject—packing for air transportation—is going to be one of vital importance in saving on the transportation dollar and one of equal importance to the carrier, if he is to get the business to keep his air freighters in operation.*

Proper and efficient loading of transport aircraft is a major problem demanding close attention to several factors. The initial selection of the cargo to be loaded requires study and experience. Both bulk and weight must be considered. Except in an emergency, you would not construct a load entirely of heavy ammunition with small bulk or of awkward engine cowlings representing large bulk and light weight. Proper utilization of the cabin area and maximum pay load demands a selection of assorted cargo comprising both weight and bulk.

Location Important

Once the load is selected actual location of cargo within the cabin immediately brings weight and balance into play. Safety and efficient flight operation require that cargo be so placed within the cabin as to result in a perfectly balanced airplane in flight. The center of gravity is, of course, the determining factor and varies with each type aircraft. A number of good systems have been devised to control the balancing of cabin loads and the Army Air Forces have standardized on one method.

A very practical problem results from the need to identify quickly and locate cargo in the cabin after arrival at intermediate destination. Because of the weight, bulk and tie-down problems it is not always possible to arrange the cabin load by destinations for easy off loading. Frequently, cargo for a further destination will have to be moved in order to off-load pieces at intermediate stops. This requires loading charts reflecting both weight and balance and location by destinations and these may of necessity be frequently changed en route, as the load changes.

Side-by-side with these developments in the handling and processing of air freight, the "papermill" must grind out the numerous records required, if freight is to be properly handled without loss, and in order that statistics on the operation may be available to those concerned with the management. Borrowing from the experience of the railroads, the steamship lines, and the established transportation companies in this greatest of all transportation nations, a new system of paperwork resembling, in some cases, its predecessor, but streamlined and pared to the bone, was set up. This included the design and publication of a new airwaybill, adapted to the military nature of our traffic, which would serve as an individual record of shipment, authority for that shipment to move, and as a basis of subsequent tracing and delivery records. Used with the Air Lot Label on shipments consisting of more than one piece, it has reduced the initial paperwork to a minimum.

A new manifest was designed which provided a record of the *movement* of cargo and which, when used in conjunction with the airwaybill number and the intransit record which is kept at transfer points, provided a step-by-step record of the movement of the individual shipment as well as a record of the cargo carrying job done by the airplane. Delivery records maintained at destination points closed the books by establishing the fact that the ATC had performed its job and turned over to the consignee the shipment with which it hal been entrusted.

High Efficiency

A great many related forms, and the detailed procedures concerned with their use, were established, changed, revised and polished until today, without going into great detail as to the method involved in the use of each of

them, it is possible to say that the Air Transport Command has a record system based on the airwaybill, manifest, intransit record and delivery record, which is the equal of any system now in use by other transportation agencies.

While all this work was being carried on, a new problem had reared its head—a new problem and a very ugly one. Reports began to trickle back of damage to aircraft caused by extremely heavy cargo which had worked loose during turbulent flight conditions and commenced to move about the interior. To say that this sort of thing was disconcerting to the crew of the airplane is to be guilty of gross misunderstatement. The thought of several tons of heavy cargo climbing the back of your neck while you exert every nerve and muscle to keep that airplane upstairs is not conducive to safe operation.

Until this time, cargo had been tied down to any projection which offered itself from bent nail heads to tie-down rings (some of which could have served as teething rings) by everything from builders' twine to anchor cable. After three or four trips the average cargo airplane more nearly resembled a mare's nest of short rope ends, since it was then common practice to use, without cutting, a hundred foot length of rope to tie down a box as large as an orange crate for fear of wastage. Someone, however, neglected to brief the crews at destination on this matter of wasting the taxpayers money. Accordingly, their favorite unloading tool was a large, sharp knife which created a mass of short lengths of rope yarn, useful only for bedding down ferry pilots, and which, I may add, were extensively used for this purpose. Of course, the knots—ranging from slip to hangman's—used by the loading crews were a considerable incentive to this sort of fancy knife work.

Useless Rope

A survey was run and it was determined that an average of some 200 pounds of these useless rope ends had accumulated in virtually every cargo airplane, to the detriment of its payload, and without offering any earthly use in securing future loads. Since the rope and knot method was slow and unsafe except in the hands of a skilled boatswain's mate, the ATC undertook, in conjunction with industry, to design and use a new form of tie-down gear which has become known as Skyloader equipment. This equipment made use of mechanical leverage for taking the slack out of rope when used, and the principal of the automobile jack for restraining extremely heavy cargo. Such a method obviated the use of knots, thereby making possible the continued re-use of one length of good, sturdy rope, rather than the assortments of sash cord, builders' twine and one-inch manila which had previously been the custom.

However, the best of tie-down equipment could do nothing, if tie-down fittings and floors were not constructed to take the wear and tear of heavy cargo and to withstand the stress encountered during turbulence. In conjunction with engineers at Wright Field, much research was given the design of tie-down fittings, their placement, and the type of flooring which would best handle heavy freight without the necessity for spending many hours in the shop repairing and replacing floors, as was the practice with the makeshift floors which had, until then, been the rule rather than the exception.

Workable Design

A design was finally approved which involved the use of aircraft plywood topped with aluminum skid strips to take the wear of skidding heavy cargo as well as to make somewhat easier the job of the man doing the skidding. These skid strips were readily replaceable by unskilled labor and, since they

IN STEP WITH THE TIMES—Twenty-five thousand such posters have been distributed among express offices, shippers, and airlines by the Air Express Division of Railway Express Agency. The move was prompted by the news that war-converted cargoplanes are being returned to domestic airlines for commercial use.

Moving boldly ahead

TODAY PAN AMERICAN is in the war up to the hilt. But just as Pan American's pre-Pearl Harbor progressiveness is helping to speed Victory, so Pan American's *post-war* plans will aid our country's position in post-war international air transport.

From the beginning of the company—in 1927—Pan American engineers have always stressed the need for using the *most advanced* flying equipment available. Last year (1944), Pan American ordered a whole fleet of new, 12,000 horsepower, 100-passenger, 300-mile-an-hour Clippers for post-war use.

These Clippers will carry passengers at less than half of the old rates. They will cross the Pacific in 20 hours instead of the seven days of the first China Clipper . . . They will fly over the North Atlantic from New York to London in less than 14 hours.

By moving boldly ahead in the period after the war, Pan American proposes to provide mass transportation for the business man and tourist at low rates unique in air transportation.

Giant, 100-passenger Clippers now on order will bring post-war fares within reach of the average man.

PAN AMERICAN WORLD AIRWAYS

The System of the Flying Clippers

PAA

C-46 IN THE FAR EAST—With the cloud-piercing Himalayas providing the background for this picture, a pair of GIs wave so long to an ATC transport plane as it takes off from a field somewhere in the China-Burma-India theatre. In 1944 the well-known Hump route brought more than twice the capacity of the Burma Road from India to China.

were the only wearing surface, tended to greatly reduce—if not almost eliminate—the time spent in floor maintenance. Tie-down fittings stressed to take the strain of heavy cargo were placed on a standard grid pattern so that an ample number of fittings were available. Thus, personnel concerned with loading might become familiar with tie-down location and more readily plan their loads. This floor is also receiving wide acceptance from Navy since it is packaged as a replacement unit by the manufacturer and is readily installed as a modification in the field.

One project now worked out is of interest in connection with much of the foregoing. Flight traffic clerks are now part of the crew of an ATC transport. These soldiers are responsible for a great variety of functions, all directed toward greater efficiency. Checking of manifests, assisting with loading and unloading at intermediate points, supervision of tie-downs, checking of weight and balance, handling of passengers, and other duties. These men are extremely valuable in the solution of our routine traffic handling problems.

There is one more phase of the air cargo picture which has not been covered. This phase might be termed traffic flow problems and the solution largely lies in headquarters planning.

The ability of each ATC route to move traffic obviously depends on the capacity of the aircraft operated per day, week or month. To "feed" traffic into the airline at a rate directly related to the capacity of the route requires planning and control. The transportation demands of a global war fluctuate greatly and it would be hard to justify a worldwide air transport system that had no traffic to move one day and a great accumulation a week later. The inherent urgency of war traffic demands a system flexible enough to make deliveries on dependable schedule wherever the exigencies of the tactical situation require.

Many interesting traffic flow problems are involved in our operations. On one route traffic is moved several thousand miles before encountering a long over-water flight which requires additional gas and consequent decrease in cabin load. The off-loaded cargo immediately forms a backlog and is subject to delay. This situation is handled with shuttle planes operating over the water jump in order that route capacity will be held constant through to destination.

On another route a different situation exists. A long over-water flight followed by shorter flights results in an increase in allowable cabin load. This situation also requires shuttle trips over the water hop to bring route traffic up to capacity for points beyond.

These are some of the problems concerned in military air cargo transportation. We are still in the development stage, facing new and difficult situations. But that makes it interesting and worth while.

In order that my readers may know that the system and equipment, of which I have given only a brief, thumbnail sketch, actually

States

GLENN L. MARTIN:

"The airplane will create new traffic after the war. This fact should be a guide in all considerations of airline, Federal, State and municipal planning. There is too much of a tendency on the part of planners to accept prewar air and steamship traffic volumes as a criterion of future air commerce. It is no more apt to compare prewar travel and transport with postwar traffic than it would be to compare steamship volume with that of sailing ship days. History has shown that with each advance in transportation, new markets and new attractions increase national and international commerce. Failure to recognize this fact may retard commercial air development, given such a tremendous impetus by research and development during the war."

CNAC PLACES ORDER—China National Aviation Corporation, which operates air routes in China, Burma, and India, has come through with an undisclosed number of C-46 COMMANDOS. Curtiss-Wright's big twin-engine transport plane will be used to carry supplies over the Himalaya Hump, from India to China. CNAC, which is under contract to the Chinese Government, cooperates with Pan American in the operation of a regular India-China route. The C-46 is the topic of conversation as the five pilots shown above get together at the Buffalo, New York, plant of Curtiss-Wright. Left to right are Howard Shireman, Curtiss-Wright; Hugh F. Chen, CNAC; Ernest W. Loane, Jr., CNAC; Paul Van Keuren, Curtiss-Wright; and Henry A. Smith, CNAC.

is *working*, it might be interesting to point out that in the year just past 402,000 tons of cargo alone were loaded and transported—roughly, the amount required to fill a freight train with its locomotive in Boston and its caboose well inside the city limits of Portland, Maine.

During 1944 the airplanes of the ATC carried cargo, passengers, and mail a total of 857,511,531 *ton miles*—not pound miles. At last air freight has grown to the point where it uses the same unit of measurement as the railroads and steamship lines, the TON! Over the roughest and most difficult air route in the world—the well-known Hump from India to China—we carried some 250,000 tons in 1944, or a little more than twice the capacity of the much publicized Burma Road.

What practical results for future commercial air cargo do we have?

We know that within payload limitations, sooner or later, anything that can be physically loaded into or on an airplane will be carried somewhere for some purpose some time.

We know how to build floors to take more concentrated loads than are likely to be found in most commercial operations.

We know how to fasten all types of loads so they won't shift in flight and still be easily released for unloading.

We have come a long way in repackaging for air transport.

We have useful forms for markers, tags, stickers, waybills and records.

We have a start toward suitable loading and unloading equipment.

And last, we know that no cargo airplane now in general use has the ready excessibility and ease required for rapid and economic loading and unloading.

I feel that under the leadership of Major General Harold L. George the Air Transport Command has stepped many years into the future of air transportation and taken on a job which may not develop in the field of postwar commercial air cargo for some years to come. How soon, is a challenge for the aircraft designers, manufacturers and operators. They must prove that it can be done *cheaply*. Their problem is to develop combinations which will deliver by air, between the points of supply and demand, as economically, money-wise, and quickly, time-wise, as competing forms of transportation. When and if—and this is a very big if—this is done, we may expect the airplane to become truly a *commercial freighter of the skies.*

IT'S AN *Air* WORLD

REG. U. S. PAT. OFF.

By L. A. GOLDSMITH, *Economic Analyst,* AIR TRANSPORTATION

THE San Francisco Conference is the next milestone on the road to the new world in the making. Every delegate there, every statesman, and/or world leader will have to consider and weigh their pronouncements, their actions, their aspirations, with an eye cocked on the new geography of this Air Age. Nothing less than that will make sense. The *political, economic,* and *military* objectives and standards of the immediate present, and the already beckoning future is upon us, and must be weighed in the balance against such considerations as these:

San Francisco—Not an Air Conference—But the Air Age Will Underline its Discussions And Weight All its Decisions

What effect will the proximity of every country to each other through air transportation—only a few hours' flight between the major capital cities of the world—have on the people whom I represent at this San Francisco Conference? What will this or that mean to the future of my country—to the well-being of our nationals—to the employment of our citizens? How can we coordinate, cooperate and create a compromise between all the conflicting interests of the different nations? How can we avoid the possibility of a Third World War?

The global realities of a world, in which, even as of today, there is no place at the maximum more than 60 hours away from every other place, reflect its instantaneous impact on every country—on every business in every country, and on every individual in every country. These stern and inescapable facts will of necessity have to be borne in mind by those responsible for the future sane and healthy development of the world we live in. They also have to think of the air which envelops us, and through which we can be literally catapulted to any part of the world in a few hours.

The Air Age has laid its grip on the San Francisco Conference. The spirit of aviation will play its part. It is up to the conferees to guide this force for the benefit of mankind so that greater heights of civilization can be reached. Or else, what is the alternative?—*Chaos,* and the depths of destruction!

Another new element will be at San Francisco in addition to the forceful factor of the Air Age. That will be the presence of women as delegates. This is the first time that women will have had the opportunity to be in official evidence at a major world conference. Women of the calibre selected as delegates of this conference can think, and very directly. Having no inhibitions on past performances nor traditions to look back upon they can be counted upon to cut through red tape and to look right through situations which may seem to be "novel" because they have not happened before.

The Woman's Point of View A New and Potent Influence At San Francisco Meeting

The United States as well as Great Britain have appointed women delegates, and doubtless other countries will follow suit. Dean Virginia Gildersleeve, well-known educator, has been named by the United States. Great Britain's women delegates are both Members of Parliament.

One of the British women delegates, Miss Ellen Wilkinson, Member of Parliament for many years, and long associated with Government policies, expressed herself in no uncertain terms regarding the coming conference when she said:

"As this war is ending, we can see the shape of the next one. *We know now that rockets can be fired great distances with tremendous effect, and that similar weapons will create a robot war on civilians, whose Governments will have to see to it that such things are not allowed to take place.*"

TERROR FROM ABOVE— "She was just turning the corner of her street, when she looked back. What she saw was not pretty! Her home was leveled, and her parents lay beneath the debris . . ."

Perhaps Miss Wilkinson was thinking of such incidents as these (described in a recent edition of the transatlantic *London Daily Mail*), as to what happens when V-bombs fall on the British Isles.

For instance, Daphne Newton, a young girl, just 13 years old, said goodbye to her father and mother and ran out of the house in a rush on her way to school. She was just turning the corner of her street, when she looked back. What she saw was not pretty! Her home was leveled flat to the ground, and her parents lay beneath the debris.

And then, think of this tragic occurrence: Three young children walking along a road—Norman and Audrey Clark and Jimmie Sturwick—and then sudden death when a V-bomb fell. What do the parents of those youngsters think and feel when such heartbreak comes upon them?

Another young boy, 15-year-old George Crawley, died in a hospital after he had been pinned down by his legs, under the debris of V-bombed houses, for nine hours. V-bomb casualties in England during the month of February were 483 civilians killed or missing (believed to be killed) and 1,152 injured, requiring hospitalization.

Is it any wonder that Miss Wilkinson, who has seen such suffering, sorrow, and tragedy strike swiftly and without warning, and who knows what rockets and V-bombs mean at first hand, says very simply: "What is achieved at San Francisco depends on *how much the Governments concerned are willing to sacrifice* to secure the goal."

The goal she means is a *durable peace*, and the "need for international amity and cooperation to guard against *the contingency of a Third World War*." Both Miss Wilkerson and Miss Florence Horsbrugh, the other woman delegate from Great Britain, believe that a Third World War is inevitable, in the event of failure at San Francisco!

Miss Horsbrugh, besides being an M.P., is also Parliamentary Secretary for the Ministry of Health. She is of the opinion that the representatives of the Allied Governments at San Francisco should consider themselves as "trustees" of the future, because, as she says, "it has taken two wars in our generation to teach us that *the next generation does not understand*."

This question of "trusteeship" for future generations is mentioned by Anne O'Hare McCormick when writing in her column *Abroad* in *The New York Times* about "a lovely girl widow" who heads an Association of Widows of Men Executed by the Germans. Mrs. McCormick points out that this girl widow stated months ago, exactly what Miss Horsbrugh now declares should be the responsibility of the delegates of the Governments meeting at San Francisco. This bereaved young Frenchwoman had previously said: "We are the trustees of the future. We cannot leave it to the next generation, because *they will not have seen what we have seen and they will not understand*."

Maybe the women of the world will be able to make the next generation understand, so that *this time will be the last time.*

Former Governor Harold E. Stassen and Senator Arthur Vandenberg are two leading Republicans who have been appointed by President Roosevelt as delegates to the San Francisco Conference. Both recently expressed their realization that the Air Age is here. Mr. Stassen has been more directly forceful in what he thinks of the aviation angle when he said in a speech since his appointment to San Francisco that isolationism was dead—ended by the airplane, rockets, and robot bombs. The former Governor and present naval commander has, however, long held international views which are strictly unorthodox as regards past traditional Republican sentiments. He even went so far, while still Governor of Minnesota, to declare most emphatically that if the world is to be assured of a lasting peace, the United States must surrender a considerable degree of "sovereignty." That belief should put Mr. Stassen way out in front as regards the requirements and responsibilities laid down by Miss Wilkinson and Miss Horsbrugh for delegates at San Francisco.

Influence of Aviation is Now Definitely a Force Underlying The Two Main U.S.A. Political Parties

If anyone should be able to appreciate the need for "sacrifices" to attain the desired goal for a durable peace, it certainly should be Mr. Stassen. Not only do his past and present views qualify him for a world wide understanding of what is required to win and maintain the peace, but he has been taking part in active service in this present war. He resigned the Governorship of Minnesota to enter the Navy, and is attending the conference on a leave of absence. Mr. Stassen brings both political acumen and background, as well as actual war experience, in his own person. As for his personality, he is perceptive and flexible enough to allow for the arduous tasks awaiting him at San Francisco.

A Republican of potential Presidential calibre, and an appointee of a President of the opposition party, Stassen as a delegate augurs well for an understanding viewpoint and a successful outcome at San Francisco.

Vandenberg's Address in the U.S. Senate on January 10 Bowed to the Air Age

In his address before the Senate of the United States, Senator Vandenberg recognized that "our oceans have ceased to be moats which automatically protect our ramparts. Flesh and blood now compete with *winged steel.*" These two words, "winged steel," seem to be the only direct reference I have been able to discern in any one of the Senator's formal addresses or informal comments. But the significance is plain for everyone to see that aviation has made its dent on the political side of one outstanding member of the Republican party, whose previous attitude was not quite that of those who believed the era of "one world" had been reached.

In the same address, Senator Vandenberg was also quite frank in saying that he wished to make his own personal viewpoint clear, when he declared that "I have always been one of those who has believed in our own self reliance. I still believe that we can never again—regardless of collaborations—allow our national defense to deteriorate to anything like a point of impotence. *But I do not believe that any nation hereafter can immunize itself by its own exclusive action.*" That is going a long way from the attitude of that little "group of wilful men" who opposed and defeated the world-wide viewpoint of another President of the United States.

While this acceptance of the world's changed situation was gracefully acknowledged by the Senator, it would seem to be apparent that such a change of personal viewpoint was hastened, shall we say, by a somewhat chastened appreciation of the different global perspective brought about by the Air Age.

The Senator is to be congratulated for having taken the initiative he did, serving notice on the world that—in principle—he, as a leading Republican, was in accord with the general foreign policy objectives of a Democratic President.

The Vandenberg speech must have been a great help to the President at Yalta. But in effect it was much more than that. Senator Vandenberg, too, felt a responsibility towards future generations. He voiced his feeling, not only for the future generations of America, but to the future generations of the world in general. The first paragraph of his momentous address of January 10, 1945, is worth going over word for word, in view of what is coming at San Francisco:

"There are critical moments in the life of every nation, which call for the straightest, plainest and the most courageous thinking of which we are capable. We confront such a moment now. It is not only desperately important to America. *It is important to the world. It is important not only to this generation which lives in blood. It is important to future generations if they shall live in peace.*"

We hope that at San Francisco, Senator Vandenberg will live up to his own stirring words by putting teeth into their consummation through actual deeds, and not be content with the lip service of fancy phraseology.

United States-Colombia Air Trade Outlook Good

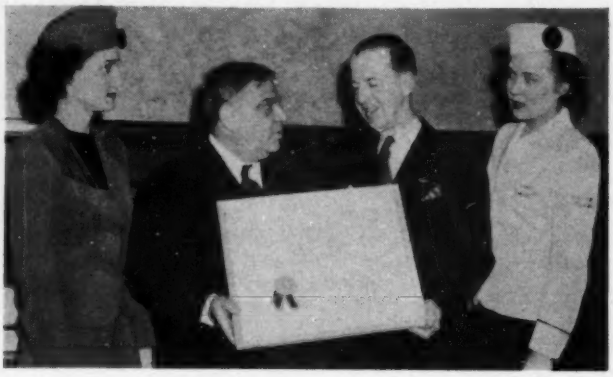
In an interesting survey made by the Transportation Unit of the United States Bureau of Foreign and Domestic Commerce, prospects for air trade between this country and Colombia are presented in an especially favorable light.

Figures showed that in 1939, of the 99 commodities the United States imported from Colombia, 46 had air cargo potentials. That year the United States exported to Colombia 1,503 commodities; of these 484 were found to have air cargo potentials.

Two out of four of the leading imports from Colombia—"bananas because they are perishable, and platinum because of its high value per pound"—are seen as immediate prospects for airborne trade. Gold bullion was not included in the commodities analyzed. However, it was found that the possibility of gold bullion's providing a substantial cargo for planes on the return trip to the United States is "extraordinarily good."

Air cargo transport is favored by the mountainous terrain of Colombia, it was found. The majority of the trade areas there is locally served by the plane, since surface transportation development has, from the very beginning, been difficult. Sea trade is carried on through the Pacific ports rather than those in the Caribbean. Air transportation's ace in the hole is pointed up by the fact that Bogota is as near to the United States as the capital of Venezuela, although by surface transportation the latter is twice as far.

AIR-TORTATION NEWS
REG. U. S. PAT. OFF.



BUDD AND THE LITTLE FLOWER—Flora seems to have held sway when Chairman John F. Budd of the Aviation Section and New York City's Mayor LaGuardia, familiarly known as the Little Flower, got together. Here Mr. Budd (second from right) is shownn turning over the civil aviation award to Mayor LaGuardia. On the right is Kathryn Stock of Eastern Airlines, and on the left, Connie Rogers of TWA.

Mayor LaGuardia Receives Civil Aviation Citation

Mayor Fiorello H. LaGuardia was awarded a citation for his "distinguished contributions to civilian aviation in the City of New York" in a ceremony which took place in the Municipal Building. The engraved certificate, which was awarded by the Aviation Section of the New York Board of Trade, was turned over to Mayor LaGuardia by John F. Budd, chairman of the section.

"You may call yourself the world's worst pilot, Mr. Mayor," said Mr. Budd in making the presentation, "but we in New York know that you have made our city the most powerful in the world for its airline and airport achievements. That has taken a powerful lot of big-time piloting."

Accepting the scroll, the mayor declared that the rapid growth of aviation in New York indicated the need for a new union airlines terminal building in the east midtown section of the city. At the same time he disclosed that a skeleton administration staff for Idlewild was being set up.

Mr. Budd referred to the action of the New York State Assembly which the day before had voted to ask that the name of LaGuardia Field be changed to General Theodore Roosevelt, Jr. Field. The Board of Trade, he said, was "quite satisfied with the name of our major airport."

Attending the ceremony were a number of officials of the city and of the Aviation Section, as well as of airlines and the Railway Express Agency.

Need for Ideal Feederliner Shown by Fairchild Survey

It's up to the plane!

If an ideal type of airplane can be built for the purpose, feederline air travel rates might be set as low as 3.5 cents per passenger mile, including city to airport trips—according to a comprehensive survey completed by the development division of the Fairchild Engine and Airplane Corporation under the direction of Dean C. Smith.

Dean C. Smith

Results of the survey show that contingent upon the development of the ideal plane, a potential market for 500 to 600 new short-haul aircraft in the United States may exist within the three-year period after sales are approved.

The survey estimates were derived from an exhaustive analysis of feederline route applications, Civil Aeronautics Board policies, economic factors affecting local air transportation, and the effect of war-surplus aircraft on initial requirements.

If feeder routes are granted by the Civil Aeronautics Board in the near future, surplus military aircraft may have to be used for a

short time. Rapid replacement of the surplus aircraft should occur when planes become available that are capable of providing the marked operating economies required for the low-cost short-haul travel market.

Projected feederline applications average 358 miles per route, with 54 miles between stops and 19 miles between mail and express pickups. There are 5.5 stops and 17.8 pickups per route. About every 140 miles each route would have a junction point with other airline routes.

Short hauls, according to the survey, would demand high frequency of service and fares less than half present airline rates. Many economies of operation can be effected by the operators, but substantial savings must be obtained through increasingly efficient aircraft and power plant design. The survey indicates that there is no existing airplane capable of providing the economical and efficient transportation required by projected feederline service.

Indications are that one of the ideal types of aircraft for short-haul work would have a flexible capacity for 8 to 12 passengers and 200 to 1,000 pounds of cargo. A desirable cruising speed of 165 mph is indicated and the airplane should be sufficiently flexible to provide passenger service, mail-express pickup service, or both. Its small size would enable operators to provide high frequencies of service with lower capital investment.

The ideal plane would have no need for a long operating range. It appears that a range of approximately 230 miles with full payload, 315 miles with 70 percent optimum payload, and an absolute range of approximately 470 miles with 35 percent payload, including standard fuel reserves, would be satisfactory. The survey also indicates initial and operating costs would be more important than high performance.

It is estimated that this ideal plane might cost from $50,000 to $70,000, and should operate on a direct flying cost of 17 cents to 20 cents per airplane mile. If indirect expenses are double this direct flying expense operators could achieve the desired passenger fare of the 3.5 cents per passenger mile, assuming express revenue would not exceed that now realized, and that there would be a compensatory mail rate.

Domestic Air Routes Are Requested by PAA In Application for Eight Express Services

PAN American World Airways has filed with the Civil Aeronautics Board its first application for a domestic air service certificate. The airline's request for permission to operate express service over eight long-range Great Circle domestic routes is generally interpreted as a move intended to protect the company in the event that domestic airlines are permitted to operate in the transoceanic field.

"For nearly 20 years, American policy has been to separate our domestic and international airline business," PAA stated. "The international operators have served our overseas territories and foreign countries except Canada. The domestic operators served the United States and Canada."

The company believes that the disadvantages to the public of a change far outweighs such advantages as may exist, and its application stated the belief that the historic separation of these two types of services should be maintained. In fact, it was pointed out, PAA has never before applied for authority to participate in the lucrative domestic traffic, which most authorities believe will be five times the United States-flag share of postwar international traffic. The application could be granted only in the event that the United States should abandon its historic policy.

If, however, the application declares the Government should decide to do so and authorize American domestic air transport operators to extend into the international field, with the consequent dilution of the American-flag share of the international traffic among several American companies, then operations of the character now applied for would be necessary and in the public interest to enable PAA to maintain a number of aircraft, of the type required for its international services, sufficient to permit economical and efficient operation. It would also be demanded by fair competitive considerations, it is further stated.

Pan American already has contracted for a fleet of huge *Clippers* for its over-ocean services—some to carry as many as 204 passengers. (This is Consolidated Vultee's Model 37, revealed last month.) Units of this new fleet would be available for the proposed domestic services.

Express routes applied for are between the terminal cities of New York and Miami, New York and New Orleans, New York and Los Angeles, New York and San Francisco, New York and Seattle, Chicago and Miami, Chicago and New Orleans, and Los Angeles and Seattle. The Model 37s would provide six-and-one-half hour service from all three West Coast cities to New York. Transport time between New York and Miami would be cut to three hours. Proportionately fast time would be made between New York and New Orleans, between Chicago and Miami as well as be-

STAMP SUGGESTIONS—Two suggested designs for an air mail pick-up stamp as recently set forth by All American Aviation, and submitted to the Post Office Department. Both were suggested and drawn by Barbara Lippincott.

ween Chicago and New Orleans. Air travel time between all these gateway ports would be cut in half.

No authority to operate local point to point service is applied for, the airline's application being limited to non-stop flights between international terminals. All of these terminal cities, except Chicago, are now main operating bases of PAA's international routes, at which Pan American already has complete traffic offices, maintenance shops, and operating organizations. Examiners for the CAB recently recommended that PAA be authorized to serve Chicago in transatlantic service to Europe in addition to Detroit, Boston, and Washington.

The company forecasts substantial fare reductions for the proposed new express services that will cut travel time in half. Low rates and fast transit time made possible by the giant *Clippers* would bring non-stop coast-to-coast and North-to-South air travel within range of the average man for the first time.

CARGO GLIDERS TO BE AN IMPORTANT FACTOR

JOHN R. KAUFFMANN, secretary and treasurer of the Laister-Kauffmann Aircraft Corporation of St. Louis, declared in an interview that the application of wartime operations of cargo gliders to postwar use will generate an increasingly larger demand of these motorless transports.

In applying these operations to postwar uses, Mr. Kauffmann said, the following facts reveal the future of the cargo glider: Many industries must be located close to the source of their raw material supply. Because of this, many are located in sparsely settled regions that provide no highways, railroads, or large landing fields. Perhaps the cost of a large airport represents an investment not justified by the companies' earnings, he suggested, or perhaps the terrain is such that the construction of a major airport is impossible.

Small landing fields can usually be built where larger ones cannot, Mr. Kauffmann continued. For this reason, he said, Canada and South America have already shown great interest in the cargo glider and industries and plantations now see the solution to their transportation problem. This same factor will also assist in the establishment of new industries and in the development of new resources, the official asserted.

He stated that before the war over 70 percent of our large transports were built for export. Canada, South America, and Alaska rely heavily on the airplane. Their inadequate

No "First" for New York, H. A. Brewer Points Out

Refuting the claim that LaGuardia Airport in New York was the first field to establish a Customs Office, H. Austin Brewer of the International Forwarding Service, Miami, Florida, has informed AIR TRANSPORTATION that Miami "for the last 15 years maintained at the International Airport a complete Customs setup, with a Deputy Collector, Appraisers, and the required inspectors on duty for the rapid handling of air cargoes arriving here from the West Indies, Central and South America, and Africa."

"In this Customs Office," Mr. Brewer added, "either the individual importer or his Customs broker could have the importations via air handled by the Customs, duty paid and immediate release, never taking longer than one hour after arrival of the merchandise. With the great expansion of air cargoes the port of Tampa, Florida, is now having a similar setup at their airport whereby cargoes arriving by the Aero Transport Corporation can be handled in a similar manner."

"It is taking New York a considerable time after the inauguration of over-ocean service to fall in line," Mr. Brewer said as a parting shot.

LUSCOMBE BUYS TEXAS LAND

The Luscombe Airplane Corporation of Trenton, New Jersey, has bought a tract of about 500 acres of level farmland in Texas on which to erect a modern aircraft factory and develop a complete new airport.

highway and railroad systems mean that great quantities of cargo must go by air, he pointed out.

"Many predictions have been made concerning the long sky-trains that will make their appearance after the war," Mr. Kauffmann continued. "Many discussions have ended with the conclusions that the future operation of commercial aviation will be the aeronautical equivalent of a locomotive pulling many cars, a tug pulling many barges or a truck cab that can leave the trailer to be loaded or unloaded while it is kept busy on a new assignment.

"The future accomplishments of the sky-train rests in the hands of the aeronautical engineers. The most economical operation will mean the designing of a tug plane especially for that purpose.

"But the bright future ahead for aviation is assured not only because the jet and the glider, and many other developments, have increased the scope of usefulness of air transportation, but also because every American is awake to the benefits, to the better living that the Air Age will bring. Their foresightedness in planning and building airports and other facilities, has already created a foundation for aviation that the designers and manufacturers alone, could not provide."

MAMMOTH GLIDER — The CG-10A, now known as the TROJAN HORSE, is a product of the Laister-Kauffmann Aircraft Corporation. It has the largest cargo space and payload of any American glider. The picture shows a two-and-a-half-ton truck backing into the cargo section of the big motorless transport.

(Trade Mark)

AIR EXPRESS

The Air Express Division of Railway Express Agency stated that air express shipments handled in combined air-rail service during January rose 20 percent over the same period in 1944. Air-rail shipments for the month totaled 45,971 compared with 38,014 for January, 1944. Shippers paid $479,800 in charges on this monthly total, against $384,538 for the same month in 1944.

International air express shipments during February gained 36 percnt over the same month last year, the Air Express Division of Railway Express Agency announced today. A total of 22,616 airborne shipments, including import and export traffic, was handled by the Agency compared with 16,514 during February, 1944.

Charges paid by shippers on this traffic amounted to $84,760 for the month, against $52,590 in 1944. Outgoing air shipments exceeded the incoming commodities by almost three to one.

AMERICAN

American Airlines announced last month that it had established in February a new monthly air freight record for the line out of LaGuardia Field when it carried nearly 74,000 pounds of cargo. This 28-day high doubled the previous record established during the 31 days of January this year.

Originating passengers carried by the company during February out of New York City totaled 15,122 as compared to 17,634 in January. Airmail poundage was 424,958 compared to 448,720 pounds in January; air express was 410,644 pounds, an increase of 23,000 pounds over February of last year.

BRITISH OVERSEAS AIRWAYS

Total miles flown by British Overseas Airways Corporation aircraft during 1944 amounted to nearly 19,000,000—an approximate increase of 50 percent over the total miles flown in 1943. The number of passengers carried was 100,852, an increase of more than 50 percent; cargo carried showed an increase of 69 percent; and mail of over 51 percent.

CONTINENTAL

Continental Air Lines flew a total of 2,689,905 revenue passenger miles during January, making the month the heaviest in the company's history. This total of passenger miles flown represented an increase of 15.8 per cent over December.

Mail pound miles flown by Continental during January totaled 29,507,202, an increase of 16.54 percent over December. Air express showed a big increase—up 84.54 percent over December.

EASTERN

Eastern Air Lines has filed with the Civil Aeronautics Board new reduced passenger fares to become effective May 1, 1945. The reductions are system-wide and averages 6½ percent below present rates. Additionally, a discount of five percent of one-way fares will be made for round trips and circle trips.

MID-CONTINENT

Mid-Continent Airliners flew a total of 2,248,892 revenue miles during 1944 as compared with 1,494,549 in 1943, an increase of 50 percent, according to figures released by John C. Collins, vice president. The number of passenger miles flown in 1944 were 21,312,458, an increase of 98 percent over the prior year.

As of December 31, 1944, Mid-Continent's average scheduled daily mileage was 6,787 compared with 5,830 on the same date in the previous year which represents an increase of 16.4 percent. For the current year airmail pound miles flown were 479,563,380; express, 71,064,191, and other cargo, 62,043,159. Percent of scheduled mileage flown during the year was 96.68 as compared with 94.54 for the year 1943.

NATIONAL

Jacksonville, Fla.—National Airlines, Inc., had a load factor of 91.93 percent for the entire line during February. According to H. S. Parker, Jr., this is the highest load factor NAL has had in its over 10 years of operation.

National carried 9,488 passengers in February, 1945, in comparison with 7,639 carried in February, 1944. The February load factor out of New York was 98.22 percent and the load factor into New York out of Jacksonville 97.01 percent.

February, 1945, revenue passenger-miles totaled 4,184,034 in comparison with 2,520,609 for February, 1944. Miami originated 2,265 passengers during February, this being the greatest number of passengers originated in any one city along the line. Jacksonville was second with 1,669, New Orleans third with 1,478, and Tampa fourth with 1,155. These figures do not include through passengers.

NORTHWEST

Northwest Airlines reported both air mail and air express loads hauled during February exceeded those of the same month a year ago. Figures released by Croil Hunter, president and general manager, show 215,332 pounds of express, an increase of more than 73,000 pounds, were carried a total of 147,861,695 pound miles, exceeding the year ago figure by more than 64 million pound miles. NWA planes, flying between Chicago, Milwaukee, the Twin Cities and the Pacific Northwest, carried 494,539 pounds of air mail a distance of 392,209,316 pound miles. Both totals exceed those for February, 1944.

TRANS-CANADA

A reduction in passenger fares on Trans-Canada Air Lines non-stop Toronto-New York services went into effect March 25, according to tariffs filed.

Holders of air travel cards were granted a 15 percent discount from the regular one-way fares, while those purchasing round trip or circle-tour tickets for cash were given a 10 percent discount.

TWA

Kansas City, Mo., March 9.—Record net earnings of $2,752,960 after taxes for 1944 have been reported today by President Jack Frye of Transcontinental and Western Air, Inc. The earnings represent a gain of 34 percent over 1943, and are equal to $2.82 a share of capital stock.

The airline's operating revenue reached an all-time high of $25,340,735, Mr. Frye said. The gain was made possible, he added, by the operation of an enlarged fleet of airliners as a result of additional equipment released by the Army and by increased utilization of planes. Of the total operating revenue, 69.4 percent was from passenger traffic; 22.3 percent from mail; 6.4 percent from express; and 1.9 percent miscellaneous.

"Total operating expenses in 1944 of $20,569,472, were 30 percent greater than in 1943," Frye stated.

UNITED

With scheduled operations of more than 100,000 miles daily, United Air Lines flew an estimated 33,742,900 revenue passenger miles during February for an 18 percent gain over the same month last year. United's fleet of 51 *Mainliners* and *Cargoliners* flew approximately 2,535,650 airplane miles in February, up 32 percent over February, 1944.

The annual report of the company revealed that in 1944 United flew 456,514,989 revenue passenger miles, 4,222,853 express ton-miles, and 18,888,704 mail ton-miles for gains of 28 percent, 6½ percent, and 71 percent, respectively, over 1943 traffic. Meanwhile, the company recorded 29,573,559 revenue airplane miles of flying and, at the close of the year, had reached an all-time peak of 100,000 miles of flying daily.

Passenger Fare Cuts Sought by Northwest

Reductions in passenger fares on all Northwest Airlines commercial flights have been proposed by the company in a tariff revision filed with the Civil Aeronautics Board. Croil Hunter, NWA president and general manager, said the company's new rate schedule calls for cuts of approximately 10 percent in all one-way fares, with an additional five percent off on round trip ticket purchases.

The proposed reduction would bring passenger fares down to slightly more than four-and-a-half cents per mile. Plans are to put the new rates into effect next month on NWA's routes between Chicago, Milwaukee, the Twin Cities and the Pacific Northwest.

Mr. Hunter pointed out that fares will be cut actually below first-class railroad fares in some cases. He estimated a fare of $122.50 for a one-way air passage between Seattle and New York.

This would be approximately $3.50 lower than train fare, including Pullman, between these two points. Passengers also would be saved the price of meals, he said, since no charge is made for food.

PCA Resumes Operations On Washington-Buffalo Route

The Washington-Buffalo route was reopened early this month by the Pennsylvania-Central Air Lines, restoring the company's air link between the war-important Western New York industrial center and the capital.

This route was ordered suspended in 1942, when military demands reduced the PCA fleet from 23 airplanes to seven. Within the past several months, the release of aircrafts from military service has resulted in the augmenting of the PCA fleet, making possible the reactivation of the route.

Harrisburg, Pennsylvania, is once again provided with north-south air service after a lapse of three years. Baltimore is provided with the most direct air service to Buffalo and the Western New York area; and as a result, the air mileage between Washington and Buffalo has been greatly reduced.

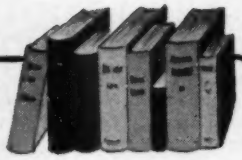
New England-West Coast Run Planned for May 1 by United

United Air Lines will open direct service into New England May 1, thereby giving that important industrial area a new direct east-west link with cities across the country. Announcement of the inaugural date was made by W. A. Patterson, president of United, who said that it was subject to approval of the Civil Aeronautics Board.

Although United has not announced schedules, it is known that two daily round trip, coast-to-coast flights are planned between Boston, Hartford, Cleveland, Chicago and points west to all major Pacific Coast cities. Additional flights will be scheduled, it was said, as equipment becomes available.

Obituary

Air Transportation records with regret the death last month of three men prominent in the field of aviation: Colonel Edgar S. Gorrell, president of the Air Transport Association of America; Vincent Bendix, inventor, founder of the Bendix Aviation Corporation, and president of Bendix Helicopters, Inc.; and James E. Sitterley, publisher, chairman of the board of J. E. Sitterley & Sons, and member of the executive board and chairman of the publications committee of the Aviation Section, New York Board of Trade.



LEGAL NOTES on Air Transportation

By GEORGE BOOCHEVER

Chairman, Legal Committee, Aviation Section, New York Board of Trade

A visit to Mexico City, in connection with the Inter-American Conference on the Problems of the War and of the Peace, afforded an opportunity to discuss the Mexican legal situation as to Air Transportation with Abog. Angel Gonzalez de Los Santos, Jefe de la Seccion de Concesiones y Pernusos, Departmento de Aeronautica Civil, Sria de Comunicaciones y Obras Publicas, the legal adviser to the Department of Civil Aeronautics, which comes under the jurisdiction of the Secretary of Communications and Public Works of the United States of Mexico.

The secretary, Maximo Avila Comacho, brother of President Manuel Avilo Camacho, died February 1945. He had been greatly interested in the development of aviation, having inaugurated an airfield and school of civil aviation on December 1, 1943, and his untimely passing was regarded as a great loss. On March 1 1945, however, President Camacho designated as successor to the deceased, Colonel Rafael Avila Camacho, who had previously filled the posts of Chief of the Economic Department, Director of the Administration of Mexican oil, etc.—an appointment which notably was received with considerable public approval.

From the conference with Abog. Gonzalez, the writer gathered that civil aviation in Mexico is in an early stage of development and the laws and regulations with reference thereto are far less advanced than they are in the United States. The whole Mexican law as to air transportation is embodied in a comparatively short article of the above-mentioned law, dealing with communications and public works. The Mexican legal adviser informed the writer that the Mexican authorities had a much simpler problem than in the United States, not only because of the present condition of Mexican civil aviation, which is dominated by one or two companies, but by reason of the difference in the federal structure of the United States of Mexico and the United States of America. In Mexico, authority is vested in the Federal Government, whereas 48 States and innumerable municipalities are all legislating on the subject here. He was nonplussed at the North American picture which the writer sketched briefly.

Then followed exceptionally close questioning by him as to how our Civil Aeronautic Board, Civil Aeronautics Authority, and State and municipal authorities were functioning, with especial interest in the procedural steps leading to the licensing of aviation companies. It was also indicated to the writer that a tremendous increase in civil aviation was anticipated in Mexico and throughout the Latin American republics; and that with such a development, which was in the offing, there would be increased interest in the regulation of this activity and its conformation to legal principles which would prove adequate to deal with the problems which would inevitably arise.

From it all, the writer was left with the conviction that the law of air transportation was in need of the application of clear and uniform rules, both in Latin America, as well as in the United States, and that it would be conducive to good relations if they would be harmonized and clarified in the interests of solidarity and closer cooperation in the Western Hemisphere.

AIR TRANSPORTATION Congratulates

M. E. A. L. DE JONG, recently appointed general manager of Royal Netherlands Indies' Airways for the United States.

Mr. de Jong's new post is in line with KNILM's planned Pacific service on the Batavia - Hollandia-Marshall Islands-Honolulu - San Francisco route. He was born in Holland 47 years ago, and graduated from the Commercial University in Rotterdam. He was in the banking and export business in the Netherlands Indies, Malacca, China, and Japan. Joining NKILM when it was founded in 1928, Mr. de Jong served as general traffic manager from the start of operations. He acted in the same capacity for KLM as well, from 1939 to 1943, this was during the period KLM was being managed by KNILM.

ARTHUR A. PIEPER, elevated to the office of financial vice president of Republic Aviation Corporation.

Mr. Pieper joined Republic a year ago as assistant to the president, in charge of accounting and auditing. He has had long experience in corporate finance and accounting, holding positions in that field of activity with International Harvester Company, Price Waterhouse & Company, and Arthur Andersen & Company. At one time he was a partner in the accounting firm of Glenn Ingram & Company. Mr. Pieper was born in St. Louis, Missouri, in 1898 and graduated from St. Paul's College, Concordia, in 1917.

GEORGE P. SAUNDERS of Washington and San Francisco, named as director of the new public relations department of Western Air Lines.

Mr. Saunders' appointment by Western Air follows four years of war service in Washington. A San Francisco public relations consultant for six years before the war, he has served as public relations officer for the Aircraft Production Board and the WPB Aircraft Division since December, 1943. His wartime work in Washington has also included service as public relations officer for the Philippine Government and consultant to the Office of Emergency Management.

WAL's new public relations chief is a light-plane pilot. He is a graduate of Stanford University, and attended the Universities of Utah, Missouri and California.

H. D. FELLOWS of New York, well known market analyst of Air Cargo, Inc., who has been appointed to a similar post with Transcontinental, Western & Air.

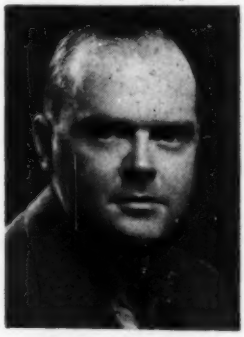
Mr. Fellows has been with Air Cargo since 1943 as a supervising analyst in the East, Midwest and Pacific Coast regions. He has specialized in studying markets in which shippers can offset the increased cost of air transport through benefits derived from fast delivery.

A native of New York, Mr. Fellows was graduated from Denver University in 1937 and took a post-graduate course in business at Columbia University. He became a market analyst for the Department of Labor and the National Bank and Trust Company of New York, and did sales promotion work for Macy's and McCreery's Department Stores in New York. Mr. Fellows will be senior analyst in the marketing division of TWA's Cargo Sales Department.

COLONEL WILLIAM P. YOUNGS, chief of the special projects division of the Air Service Command, and a former executive of Curtiss-Wright Corporation, who has been awarded the Bronze Star Medal for "meritorious service in connection with military operations" by Brigadier General Clarence P. Kane, commanding general of Air Service Command, United States Strategic Air Forces in Europe.

Colonel Youngs received the award for playing a vital role in establishing American air bases in Russia for our bombers. He was associated with Curtiss-Wright Corporation with headquarters in New York, and previously was with that organization's aircraft engine manufacturing division, Wright Aeronautical Corporation, before entering the Army Air Forces as a major in August, 1942. Before going with Curtiss-Wright Corporation, he was a pilot for Pan American Airways in Miami.

CHARLES J. COLE, of Upper Montclair, New Jersey, appointed assistant to the traffic manager of the Atlantic Division of Pan American World Airways with headquarters at LaGuardia Field.



Following his appointment he left New York for an inspection trip to Atlantic Division stations which are located in South America, West Africa, Portugal, and the British Isles.

Joining the international airline in 1938 Mr. Cole has served in a traffic capacity in Miami. On loan from Pan American to its affiliated South American line, Panair do Brasil, he set up a reservation system at the Rio de Janeiro headquarters and later served as a civilian in the Army's Air Transport Command priorities office in Washington, D. C. Mr. Cole was graduated from Canterbury School, New Milford, Connecticut, in 1934, and from Georgetown University in 1938, receiving a Bachelor of Science degree in foreign service.

JACK MISSELHORN, district traffic manager at Oakland, who has been appointed district traffic manager at Detroit in preparation for the start of service by United Air Lines to that industrial center; and **STANLEY O. HALBERG** who becomes district traffic manager at Oakland. The latter is succeeded as assistant district traffic manager at San Francisco by **LEWIS A. SWENSEN,** who has been in charge of United's mercantile division there.

E. O. COCKE, general traffic manager of Transcontinental & Western Air and one of the line's first employees, who has been elected vice president-traffic.

Starting as a passenger agent on June 10, 1929, when Transcontinental Air Transport was formed, Mr. Cocke dispatched the plane-and-train line's first eastbound flight from Los Angeles on July 7 of that year. Later he served as chief dispatcher of the western region of TAT - Maddux Airlines, and after the organization of TWA, he became chief clerk to the traffic vice president in New York. Since then he has been assistant traffic manager of the eastern region and district traffic manager in Kansas City and Los Angeles and regional manager in Pittsburgh.

He was appointed system sales manager in 1941 and general traffic manager the following year, serving in that post until his election to the vice presidency. Mr. Cocke was born in Honolulu where his father was stationed in Government service. He was graduated in 1927 from the Wharton School of Finance of the University of Pennsylvania with a Bachelor of Science degree.

ROBERT S. DEMAN, formerly associated with the Office of the Chief of Transportation of the War Department and with the War Production Board in Washington, who has been named manager of the Miami office of Air Express International, Inc., general agents for the West Indies division of KLM.

For eight years previous to entering Government work in 1942, Mr. Deman was affiliated with the Thomas Cook and Son Wagon Lits, Inc., New York travel agents, as international transportation specialist. In the capital he was first connected with the WPB as principal industrial advisor, and later with the Office of the Chief of Transportation of the War Department as assistant chief of the Supply Control and Analysis Division.

COLONEL B. C. ALLIN of Berkeley, Cal., for the past six months director of the Greater Miami Port Authority, has resigned to join Airways Engineering Consultants, Inc., 1621 Connecticut Ave., N. W., Washingington, D. C.

Upon Colonel Allin's return to California he will become vice president in charge of the Pacific Coast area and make his headquarters in Berkeley. He holds a commission in the Transportation Corps, United States Army, and before going on inactive status to take up his work in Miami was Chief of Transportation, Trinidad, British West Indies. Before entering the Army, Colonel Allin had served as director of the Port of Houston, Texas, and director of the Port and chief engineer of Stockton, Cal.

AMERICAN: Bradford S. Gibson, new district traffic manager in Dallas, Texas. He joined the line in 1935 . . . **H. Gallemore,** appointed manager of operations in Fort Worth, Texas. He started as a mechanic nearly 15 years ago . . . **W. P. McFail** is the new manager of operations in Nashville, Tennessee. Associated with AA and its predecessor since 1928 . . . Chicago manager of operations is **T. G. Williams.** He first joined the company more than 16 years ago. . . . **Gage Mace** is assigned to Los Angeles as manager of operations. Prior assignment was director of operations research at LaGuardia Field, New York, company operations headquarters . . . **John W. Burke,** new plant engineer at LaGuardia Field for AA.

AMERICAN EXPORT: D. W. Holmes, named to the post of personnel assistant to the executive vice president.

CONSOLIDATED VULTEE: Spencer Leech, appointed executive assistant, acting in the capacity of assistant to the sales director. He will operate in connection with the Stinson postwar sales program.

CONTINENTAL: George D. Rash, appointed to the newly created position of manager of schedules and tariffs . . . **Matt J. Kramer,** promoted to the post of chief clerk.

CURTISS-WRIGHT: James Thomson, assigned to the company's military programs staff. He will handle export liaison and contacts with foreign customers.

EASTERN: Major Albert E. Blomquist, who returns to EAL after his release from the Army Air Forces. He resumes his former post as airport engineer, with headquarters in Miami, Florida.

FAIRCHILD: Marvin J. Parks, who has joined as flight service engineer on the C-82 project. He previously served as assistant director of contracts at Curtiss-Wright in Buffalo, New York.

MID-CONTINENT: Edward J. Ryan, promoted to the post of city traffic manager covering MCA's Minneapolis-St. Paul territory. He formerly held the post of superintendent of air mail and express operations.

NATIONAL: Robert P. Foreman, raised to executive assistant in connction with operations and traffic . . . **J. F. Lumpkin,** new Jacksonville traffic manager . . . **J. D. Culpepper,** formerly Jacksonville traffic manager and a graduate attorney, who will specialize in legal matters as assistant to Mr. Foreman.

NORTHWEST: Five new chief transportation agents in NWA's Eastern region: **Paul Benscoter,** Chicago; **C. R. Seybold,** Milwaukee; **W. M. McGoon,** Rochester; **B. J. (Red) Fitzsimmons,** Minneapolis, and **E. V. Folkstad,** Fargo.

PAN-AMERICAN: Mrs. Rita Scott, who leaves the McGraw-Hill Publishing Company to take over the editorship of the Atlantic Division's weekly house organ, *The Clipper.*

. . . **Captain Hamilton Smith,** awarded a 10-year service pin; he is assistant chief pilot in charge of training for the Atlantic Division.

PENNSYLVANIA-CENTRAL: Robert M. Brinkley, new assistant to the general traffic manager . . . **Edward Sullivan,** raised to the post of director of station sales . . . **Charles M. Knoble,** who has won the title of director of air cargo sales . . . **James B. McCullough,** new manager of interline and agency sales . . . **Morris Knowles,** former Southern region traffic manager, now manager of industrial sales . . . New station managerial posts: **J. L. Bubna,** Chicago; **Earl Richmond,** Lansing; **D. M. Munro,** Akron; **Gordon Payrow,** Youngstown; **Bruce Simpson,** Clarksburg; **W. L. Warlick,** Knoxville; **James Hauke,** Tri-Cities . . . New assistant station managerial post: **C. H. Taylor,** Chicago . . . Chief agents: **D. T. Metzger,** Detroit; **C. J. Speer,** Cleveland; **H. H. Stewartson,** Pittsburgh . . . Reservation managers: **W. G. Albers,** Chicago; **J. L. Brown,** Norfolk . . . **F. M. Sickle,** company meteorologist, who was awarded a prize of $150 by the Air Transport Association for his research developments in meteorology, having a practical application to the dispatching of aircraft.

TRANS-CANADA: J. H. Sandgathe, appointed superintendent of training. Prior to his appointment he was chief pilot of the Western Division.

TRANSCONTINENTAL & WESTERN: Ralph C. Ayres, new superintendent of communications. He has been with the line nine years . . . **Larry J. Vandegrift,** new field director of industrial relations. He started just six years ago as a junior clerk.

UNITED: Charles H. Cuny, appointed credit manager for the line. Most recently he was assistant credit manager of the Caterpillar Tractor Company.

MISCELLANEOUS: William E. Cullinan, Jr., formerly with the CAA, now with the Bureau of Aviation in the New York State Department of Commerce . . . **Hubert C. Watson,** former assistant traffic-advertising manager of PAA, and recently special assistant to the Atlantic Division traffic manager, now with Walter Dorwin Teague, 444 Madison Avenue, New York, as consultant on aviation design . . . **Francis W. Brown,** assistant chief examiner of the CAB, who now holds the title of chief examiner . . . **Captain C. H. Schildhauer, USN,** named coordinator of all JRM-*Mars* work for the Navy . . . **Gordon A. O'Reilly,** who has left TWA for a position as vice president and general manager of Aeronautical Radio Incorporated of America, with offices in the capital.

TRACY WALSH, appointed executive assistant to the vice president in charge of operations of Braniff Airways.

He has been in charge of the Army cargo division since March, 1942, when it was set up shortly after Pearl Harbor. As manager of the company's Army's activities, Mr. Walsh supervised more than 150 full-time employees engaged exclusively in Army cargo service. He became connected with Braniff Airways 10 years ago.

A native of Mocksville, North Carolina, Mr. Walsh was graduated from the University of Florida in 1930 with a degree in electrical engineering.

He is a member of Chi Phi fraternity. After a period of employment with the General Electric Company, Mr. Walsh became an aviation cadet at Randolph Field in 1933 and was graduated from the advanced flying school at Kelly Field in 1935.

D. K. PHILLIPS, superintendent of ground service for Transcontinental & Western Air, who has been granted leave of absence to become general manager of TACA Airways' operations in Colombia and Venezuela.

Mr. Phillips, who joined TWA in 1936, executed a major wartime assignment for TWA when he organized and managed a Modification Center at Kansas City where bombers for the Army Air Forces were outfitted for combat duty. His prior assignments with TWA were as traffic Manager at Harrisburg, Pennsylvania, and station manager at Newark, New Jersey. When La-Guardia Field was opened in 1939, Mr. Phillips was assigned to the important post of station manager for the airline at that port.

(Trade Mark)

Northwest Airlines has taken space at the new city information center at 42nd Street and Park Avenue, New York City. NWA has a newly authorized extension of its routes in Detroit and New York.

Pennsylvania-Central Airlines has become the fifth airline to record its 2,000,000th passenger. Nearly a half-million passengers were carried in 1944.

In the future, planes will be able to land and take off blind, avoid collisions, and pilots will know at any instant how far they are from their destinations. How will these be possible? Electronics is the answer, says T. W. Hall, Trans-Canada Air Lines' supervisor of ground station maintenance for Canada.

The Surplus War Aircraft Division has notified National Airlines that NAL has been allocated two more Lockheed C-60s. Each carries 14 passengers.

Seven world's flight records, all transocean, have been set by Douglas C-54 *Skymasters* in recent months: Miami to Calcutta, 11,000 miles, 46 hours and 45 minutes; London to Washington, 3,800 miles non-stop, 17 hours and 50 minutes; Rio de Janeiro, 5,300 miles (two stops), 22 hours and 55 minutes; Washington to Paris, 3,600 miles, 18 hours; Washington to Naples, 4,200 miles (two stops), 24 hours; Los Angeles to Honolulu, 2200 miles non-stop, 10 hours and 40 minutes; Honolulu to Alaska, 2,600 miles non-stop, 12 hours.

When Don Francisco de P. Gutierrez, Ambassador of Costa Rica, put his signature to four agreements concluded at the International Civil Aviation Conference, his country became the 42nd to enter into the Interim Agreement, the 40th to agree to the Convention, the 34th to okay the Two Freedoms, and the 22nd to check the Five Freedoms.

The publishers of *Guia de Importadores* have released a brochure entitled, *Gateway to World Markets*—a pictorial presentation of Guia, covering its organization, personnel, and facilities available to those engaged in international trade. A copy may be had by writing J. E. Sitterley & Sons, Inc., 440 Fourth Avenue, New York 16, N. Y.

Western Air Lines will be listed and traded on the New York Exchange, it was announced by Leo Dwerlkotte, executive vice-president. Previously the stock of this pioneer western company has been traded on the New York Curb Exchange. At present WAL has a total of 409,954 shares of common stock outstanding. The New York Trust Company of New York has been appointed as transfer agent in the East, and the Chase National Bank of New York will act as registrar for the company's stock.

Overnight service from Miami, Florida, to Caracas, Venezuela, for business men, diplomats and other travelers, has been inaugurated by Pan-American. The *Clipper* departs at 11:30 p.m., arriving at its South American destination at 10:45 a.m.

Lower valuation charges and insurance premiums on cargo, have been initiated by American Export Airlines. Cargo shipments up to one and one-half tons on each flight will be accepted for transatlantic destinations after May 1.

The Port of New York Authority has filed a brief with the Civil Aeronautics Board in behalf of the establishment of direct non-trunkline air service between various communities in New England and Eastern New York State, and the New Jersey-New York Port District.

It is in the public interest that any reduction in United Air Lines' revenues should be made in passenger tariffs rather than in mail rates so that the traveling public may benefit, United declared in an answer to a "show cause" order of the Civil Aeronautics Board as to why its rates for carrying mail should not be radically reduced.

A bulletin on air cargo potentials between the United States and Canada has been released by the Industrial Reference Service of the Department of Commerce.

A survey to determine consumer preference for airborne perishables has been launched experimentally by United Air Lines, Wayne University, the Great Atlantic & Pacific Tea Company, and the Goodyear Tire and Rubber Company.

Britain's plan for postwar civil aviation, splitting up future air commerce routes among only three companies, has been approved by the House of Commons. Former Secretary of State for War Leslie Hore-Belisha attacked the proposals, saying that after the war "the United States will be girdling the world with its aircraft." He held up the United States' CAB as model. Anyone who "wished to run an airline could appear and state his case," Hore-Belisha declared.

Spain and the United States have completed an agreement for the development of a new airfield opposite the Madrid airport to enable large planes to handle American supplies for Allied armies of occupation and for liberated countries.

Mayor Fiorello H. LaGuardia of New York City, who is president of the United States Conference of Mayors, last month urged a Senate Commerce sub-committee to seek prompt action for Federal planning of postwar construction of a "national system or network" of airports.

Sweden and the United States have signed an agreement providing for the flight of mutual courier planes between the two countries. The courier system will be continued until commercial airlines can implement plans for regular service between Sweden and the United States.

Charles A. Rheinstrom, vice president in charge of traffic of American Airlines, has predicted that freight service eventually would bring airlines more revenue than passenger business. Mr. Rheinstrom made the prediction during testimony at a Civil Aeronautics Board hearing on 50 applications for expansion of airline facilities in the Midwest.

It is reported that 85 British shipowners are looking forward to entering the field of airlines, and are watching closely the American Government's attitude toward joint sea-air routes.

The signature of Governor Thomas E. Dewey has created a Division of Aviation in the New York State Department of Commerce.

According to Lord Swinton, British Minister of Civil Aviation, Britain is building 110-ton, 100-passenger planes for postwar transatlantic routes.

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